Spring
No 51 — August, 1986/$2.75*

EARTH GARDEN

Energy efficient
SOLAR KIT HOMES

The self sufficient house

Add a solarium

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People & places

Vegie basics

Corn is king

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Energy updates

3 ply spinning

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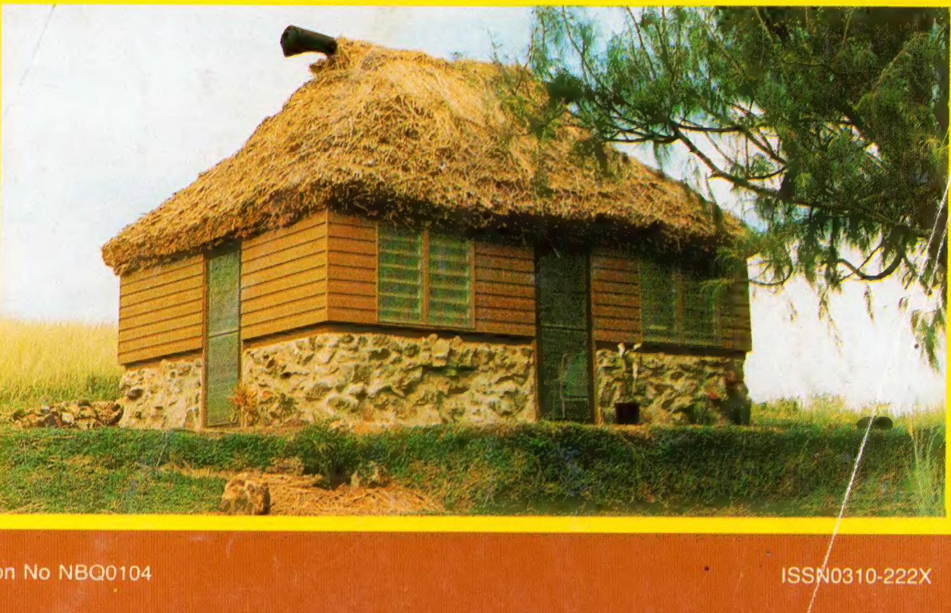

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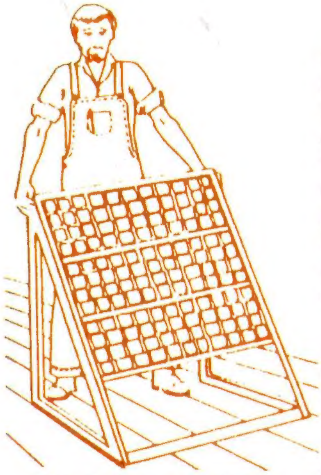
EARTH GARDEN BOOKS



ENERGY WORKS!
Home Energy Systems
By Keith Smith

Nelson, Melbourne, 1985, large format paperback, 211 pages, illustrated. ☐ $19.95 posted.

Why spend the rest of your life paying someone else for your electricity? Here's how to plug in the renewable energy of the sun, wind or water using an efficient 12V or 240V solar electric system, wind generator or water turbine. Run lights, radio, TV, computers, tools and appliances wherever you live.

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This is a quality book, printed on fine white paper, which makes an ideal gift for anyone who loves herbs and gardens or the classic 16th century herbals about them.

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"A fragrant impression of the old herbals and the men who wrote them." — *Daily Telegraph*, London.

HARD TIMES HANDBOOK
Survive — and thrive!
Keith & Irene Smith

Nelson, 1986, 204 pages, 70 illustrations. ☐ $8.50 posted.

This is the second, corrected edition of our practical book of skills, strategies and short-cuts for urban survival. HARD TIMES HANDBOOK outlines a new, self-reliant approach to city living. It tells you how to do more with less, be prepared for food shortages and emergencies, save energy, make money without a job and manage your food supply. Make bread, yoghurt, soft cheese, candles and soap. There are 150 recipes for cheap, healthy tucker and 180 money-saving household hints.

Third Earth Garden Book

Edited by Keith & Irene Smith.

Nelson, 1981, large format paperback, 256 pages, illustrated. ☐ Special $5.50 posted.

A collection of practical, original, human-scale methods for providing the essentials of life, with stories from New Settlers on farms and communities all around Australia.

The Third EG Book tells you how to build fences, gates, a concrete water tank, plastic greenhouse, Coolgardie safe and compost privy; how to spin and weave, make rugs, dilly bags or baskets; how to build your house from earth, stone or timber; how to raise coloured sheep, freshwater fish or yabbies, or grow permanent tree crops and protein-rich legume crops.

EARTH GARDEN 51

Earth Garden, started in 1972, is the original Australian journal of self-reliance. It is intended as a friendly forum of practical ideas, shared knowledge, sources and alternatives.

It's about putting a roof over your head, growing your own food, using alternative energy and surviving — and thriving — in the city or the bush and the inner changes which follow when you are in tune with nature.

Published and edited by Keith and Irene Smith.

Illustrations by Elaine Norling.

We welcome advertisements appropriate to the aims and ideals of Earth Garden, but reserve the right to refuse ads at our discretion. Send SAE for display rates.

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The cover

Top: Les Waddington laying 'two faced' stone at Mooral Creek, NSW (see page 25). *Centre:* A solar house on the outskirts of Sydney, built by Sun Earth Homes (see page 10). *Below:* A traditional native *bure,* built by Paul and Corrie Wright in Fiji (see page 4).

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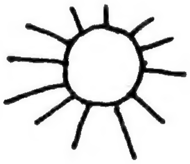

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BEST OF BOTH WORLDS

Nandi, Fiji

By Corrie Wright

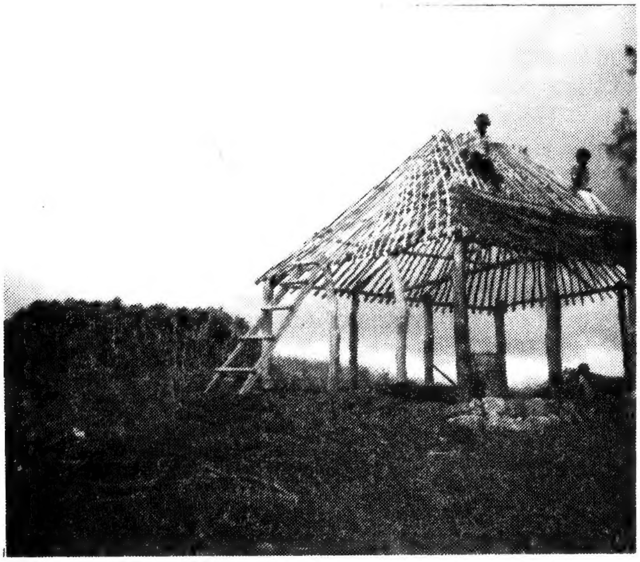
My husband Paul and myself were typical Sydney dwellers until a year ago.

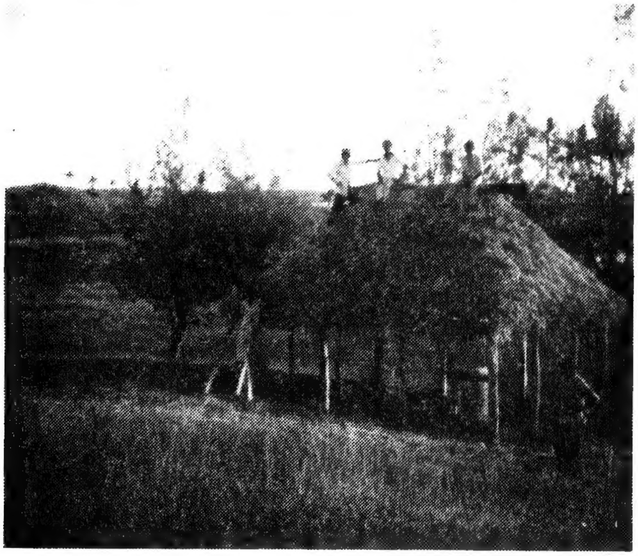
For nine years we ran our own hairdressing business, which was quite successful, but city life was waning for us and our attitude to it had taken a reverse turn. I became a vegetarian and so in turn did Paul (as I'm the cook!), which brought with it a new outlook on life and what we were doing with ourselves and our future.

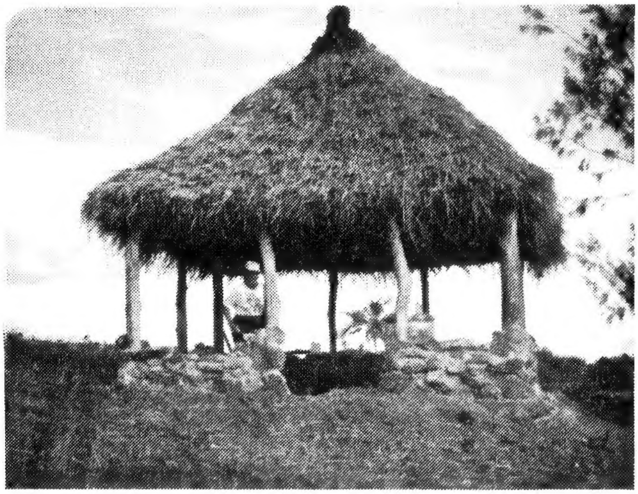
In between all this we had the usual city dweller's holidays to Bali, Europe and Fiji. Being business people we used to look about for business possibilities even while on holiday. This usually came to nothing, but it was interesting. One of our real estate jaunts put us on to some 12 acres of beachfront land in Fiji which was freehold (only 3% of land is here is freehold) and had vendor finance.

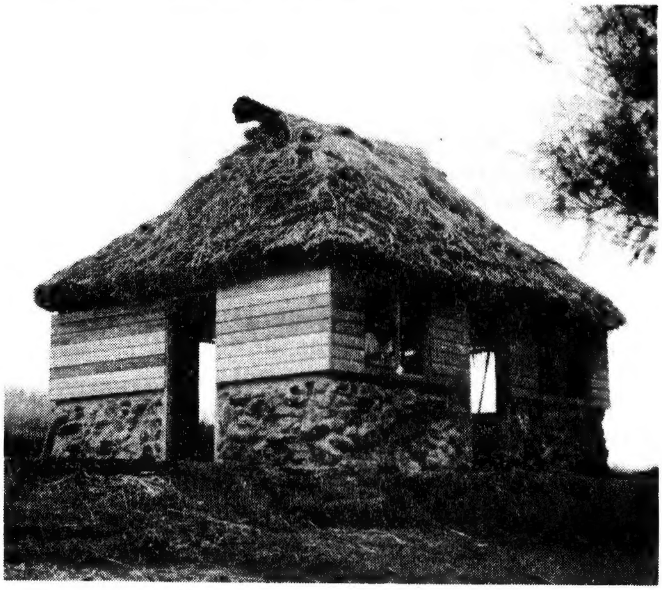
So, suddenly in 1983 we were land owners, though we weren't sure what we intended to do with our land. For the next two years we went through hundreds of ideas. We knew we would have to have some kind of business to keep us and also to be allowed to stay and live in Fiji. We imagined we could have the best of both worlds, an alternative lifestyle and a money making business.

The combination of the smell of perm. solution and the









Steps in building our Fijian *bure*. Photos show in sequence:

1. A layer of palm leaves being tied on to the completed bush timber frame.

2. The thatch goes over the plaited palm leaves and the traditional tree fern trunk which protrudes from each side of the ridge.

3. The next stage is a base and low retaining walls of rock — quite an experience for us.

4. It's all finally come together when the weatherboards are on.

effort of trying to do things by mail finally got the better of us at the end of 1985. We set out to try and make a go of it one way or the other. Our venture was in tourism and we had one proposal of a substantial top market resort. After arriving in Fiji and surveying our land with a down to earth attitude, we decided that our beach (which was once mangroves) didn't warrant that type of resort, so we weren't sorry when our first loan was turned down.

We gradually scaled things down and came up with our present plan for Fiji's first camping resort within the means of Trekkers. We decided to go it alone with the only people we could rely on (us) and a tight budget (with what money we had left). Things were going to be very basic, with tank and well water and no electricity. This time we seemed to be heading in the right direction. We went to a local bank to ask for an overdraft to see us through the teething stages ... and we found the bank manager of our dreams. He was so receptive that we put forward some other ideas and it looks as if we will be able to add some luxuries like a generator and another house for ourselves (as we would have been living in the office-cum-kitchen where we are now).

All this activity took place from September 1985 to June 1986. Anyone who has been to Fiji will know about 'Fiji time', which seems to be hours, days and sometimes months different to everywhere else. In between we've been soaking up the sun, lying in a hammock by the beach. We've fenced the place and started planting 200 new coconut trees while living in a tent on our land (maybe that was an omen?).

Building the *bure*

We decided to have a Fijian style thatched hut, called a *bure*, built for us by locals. This would take about a month and cost us about $400. Fiji time hit us again and after many a frustrating day trying to get things organised we had a roof frame after three weeks. The delays got the better of us, so we dismissed everyone except two young (13 and 17 year old) friends and workers and decided to do the rest ourselves.

Paul's only experience with building was woodwork classes at school many moons ago and I could only lay claim to a father who was a cabinet maker. At least we had our frame, so that was a good start. A traditional Fijian *bure* is made of a bush timber frame, thatched roof of woven reeds or grass and walls either of matting or grass and a dirt floor. We kept the bush frame and thatch, but added stone (from our own stock on the beach), timber walls and a cement floor.

It was a slow and sometimes arduous process, but we learnt as we went, making many a mistake. The only outside help we had, apart from our two young friends, was for the thatching. The photographs show the different stages better than I can explain them to you on paper. To cut a long story short, we were ready to move in within four months.

I must say that Paul, despite lack of knowledge, lived up to his star sign (Virgo) and did a fantastic job. We were lucky with the weather as it was the rain and cyclone season and we only suffered the tail end of one cyclone (there were four in the same period the year before) and far less rain on our side than normal. This was a blessing as we were in the tent for five months all told, on what we now know as Windy Hill!

We've lived more of an alternative lifestyle than we planned originally. We've had to dig wells for water, which we carried by bucket until we got our pump. We've used gas lights and an outdoor bathroom with no walls. Don't forget that we were city dwellers, used to lights and running water at the flick of a switch. Admittedly this has been more from necessity than desire, but we'll never go back to the city, though it's nice to visit.

Even though we will get a few creature comforts when money permits, we still like growing our fruit and vegies organically and having our own produce for ourselves and our guests. We'll enjoy watching our coconuts shoot into trees and getting the nuts ourselves.

If being 'earthy' is being able to see the stars without a haze of pollution, helping the environment in a small way and enjoying it, then maybe we are *earthies* after all.

Corrie Wright, P.O. Box 9839, Nadi Airport, Fiji.

KEEPING HARES OUT OF THE GARDEN

This is a method for keeping rabbits and hares out of unfenced gardens.

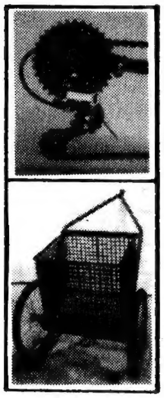
Soak twine in creosote and string it around the garden, or small trees, just a few inches above the ground. They hate the smell and won't go near it.

It worked for Dad after he had his garden wiped out on numerous occassions when we lived on the outskirts of a small town.

Chelmer Roots, Biloela, Queensland.

mail order catalogue

As a service to the neglected cyclist outside Sydney we have produced a Mail Order catalogue . . . a full range of quality parts is now available to the isolated rural cyclist.



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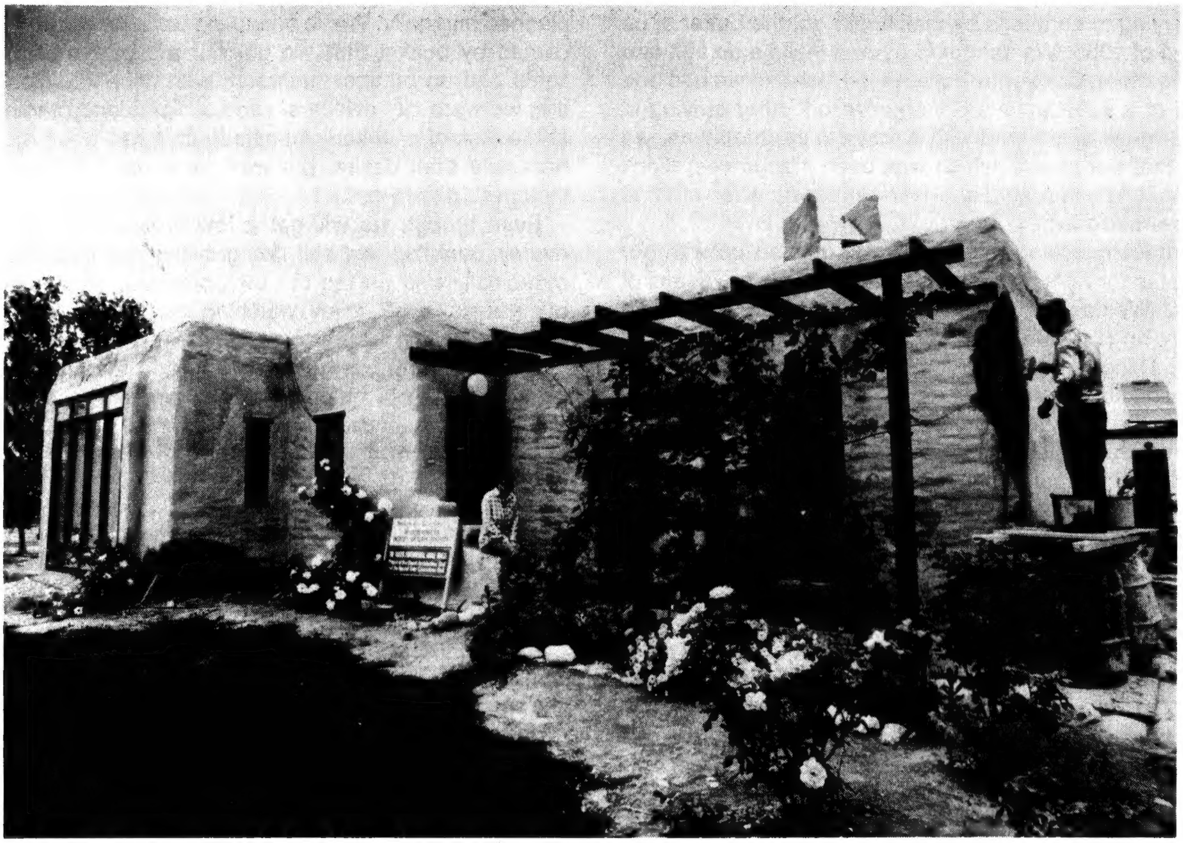


Finishing touches are made to the adobe (mudbrick) passive solar house built by scientists from the Blaustein Centre at Sde Boker on the edge of the Negev desert in Israel. The room with the 'kinetic wall' of rotating columns is at left.

The shrinking desert

Scientists study desert water run-off, salt-tolerant crops and an adobe solar house.

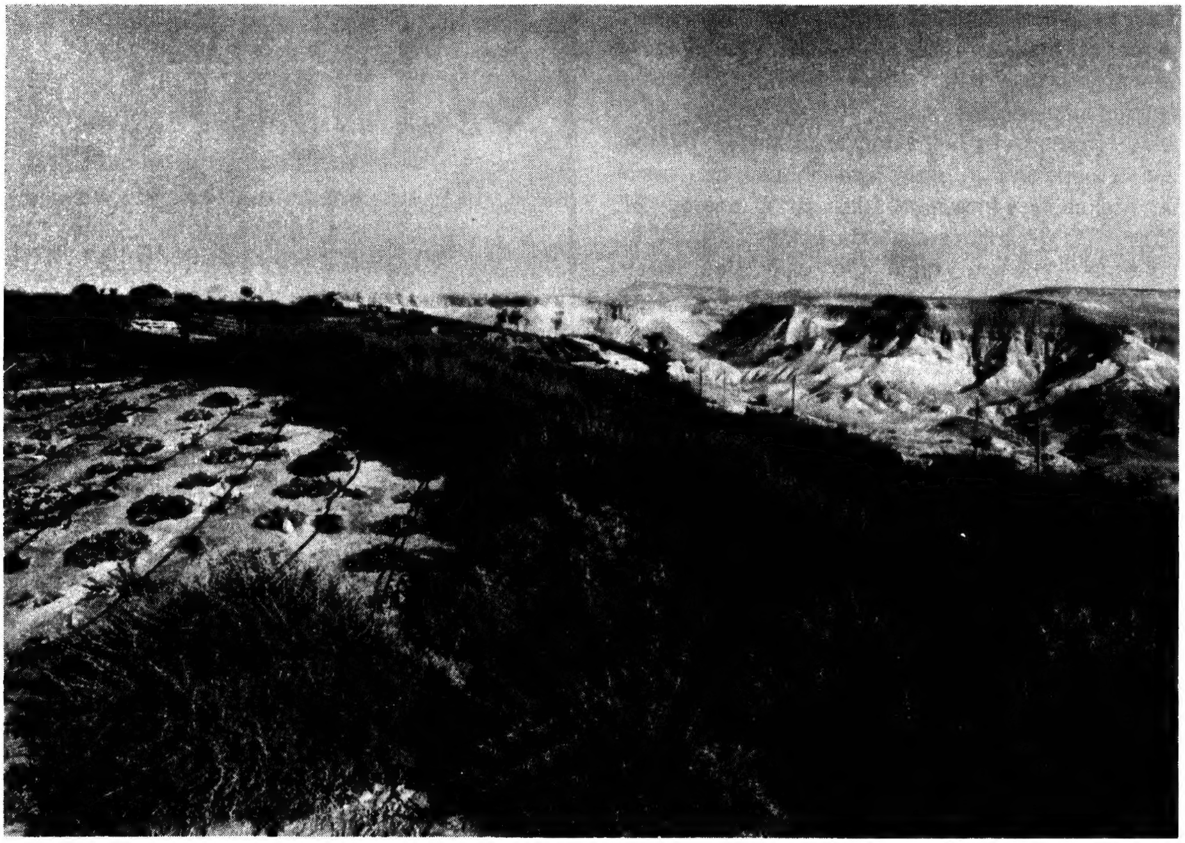
By Ellen M. Davidson

Sde Boker, Israel — Arid deserts may be suitable for the rugged camel and the hardy cactus, but are they a fit place for man? Can he live and even prosper in one third of the earth's land mass which is dry, hot desert? Scientists working in Israel's Negev Desert, an area covering 60% of this small Middle Eastern country, offer an unequivocal "yes". At the Blaustein International Center for Desert Studies at Sde Boker, some 125 km south of Tel Aviv, 72 scientists of various disciplines are working on the "how".

"In the desert everything is extreme," says a Sde Boker scientist who lives and works in an oasis community on the edge of the dramatically contoured wilderness of Zin. "Too much light, too much salt, too little water, heat in the daytime, cold at night." The staff of the Blaustein Center are harnessing these extremes and demonstrating that the dreams of Israel's founders to settle such inhospitable areas can be realised in the 20th century.

One man who believed that the future of Israel was in the desert was David Ben Gurion, Israel's first prime minister; his tomb stands next to the Blaustein Center. Having been an immigrant from Russia, it seems fitting that many of the men and women scientists who staff these facilities are immigrants from Eastern Europe and North and South America. Together with *Sabras* (Israeli-born) scientists, they are confronting the desert, just as David Ben Gurion envisaged, probing above and below its crust, beating back its hostility and causing the Negev to be the only shrinking desert on earth.

In their white barracks-like huts, surrounded by drip irrigation fed pine trees, narcissi and daisies, scientists work in 16 different units, considering the challenges of the desert. Here they grow salt-tolerant plants which could be food for humans or livestock. They design more efficient ways of capturing and storing solar energy. They draw up architectural designs for living comfortably and graciously in the desert; they consider how to tap



At Sde Boker precious water is distributed through computer controlled drip irrigation lines (at left), helping the desert shrubs to thrive (right) and protect the land from erosion. At far right is the awesome Wilderness of Zin.

underground aquifers and how to squeeze more rainfall from winter clouds.

The age old question of how best to use the limited desert water supplies is an inter-disciplinary issue. Ruins in the desert near Sde Boker tell us that the Nabateans who thrived here more than 2,000 years ago were able to grow all their food needs. They did this by collecting rain in run-off areas 20 times as large as their cultivated fields. The principles of their ancient system have been put into action at Sde Boker by Professor Michael Evenari, a botanist in his 70's who for the last half century has been studying the Nabateans and trying to understand how the community survived in the arid northern hills of the Negev. Using the Nabatean system of trapping run-off rainfall from the bare, rolling hills today, agronomists are growing olives, almonds, pistachios, wheat and barley.

Israeli scientists are now sharing the revived, ancient techniques with students and engineers from 15 countries in Asia, Africa and Latin America who have participated in three six week training courses at Sde Boker; at home, graduates have already started their own experimental run-off farms in five countries.

The sparse rainfall has also been the concern of Professor Louis Berkofsky, an MIT (Massachusetts Institute of Technology) educated mathematician and meterologist who has been delving into the subject of desert climates since he settled in Israel 11 years ago. One of the experiments in his unit is a carefully controlled programme of cloud seeding which includes intensive monitoring of clouds in the Negev area with the aid of a radar-like satellite cloud imagery receiving system. Prof. Berkofsky's unit also studies meterological problems influenced by the movement of dust.

Another answer to the problem of limited water supplies is making use of the vast saline aquifers that lie beneath the Negev (and many deserts of the world). Blaustein Center scientists have succeeded in creating salt-tolerant crops which can be grown on the sub-surface water. Nearby settlements are already growing acres of tomatoes and melons — new strains created at Sde Boker which thrive on brackish water and taste sweeter, not saltier.

Parallel with the research to develop salt resistant crops is the work of Professor Arye Isar, a hydrologist at the Blaustein Center. Prof. Isar is working on plans for a new Negev water carrier of the magnitude of Israel's existing water carrier which brings water from the Sea of Galilee to the south. He estimates that approximately 70 billion cubic metres of brackish water lie under the Negev. The new carrier can make about 300 million cubic metres of this water available annually.

What the Negev lacks in water is balanced by the abundance of sunshine. A novel greenhouse has been built which takes advantage of the sun's energy 24 hours a day. The greenhouse stands next to a pond in which infra-red radiation from the sun has been stored during the day. This surplus daytime heat is later recirculated to warm the greenhouse against night-time temperatures. Additionally, carbon dioxide is pumped into the greenhouse to double the rate of growth of flowers. Water used for irrigation in such a closed system greenhouse is only 10% of the amount normally needed. Sde Boker greenhouse engineers believe that the greening of the desert will be largely dependent on closed system greenhouses such as theirs.

If flowers and vegetables will live in futuristic greenhouses of this design, where will man live? Dr. Yair Zarmi of the Applied Solar Calculating Unit points to a strange looking structure which he says is the Sde Boker answer.

"This is an adobe building, built of unburnt bricks made of our locally available clay — the *loess* you see all around," says Dr. Zarmi, who explains that the adobe house is a passive structure of three rooms which are cooled and heated by three different systems. Outer adobe walls are massive and do not conduct heat. An inner wall provides thermal storage and the air gap between provides insulation. Vents and windows used for ventilation and conductors of solar heating are placed strategically; for instance, the large living room window captures the sun's direct rays, storing a large portion of heat in the dark tile floor which becomes so comfortably warm that the occupants enjoy walking barefooted on a winter night. Perhaps the most interesting innovation is the adobe house's 'kinetic wall'; large rotating columns painted a dark colour for absorbing solar heat in winter on one side and a light colour for reflecting the summer heat can be changed at will by the occupants to suit the outside temperatures.

As the sun sets on the adobe house, the windows, vents and kinetic wall are adjusted by its occupants for the cool night ahead. The scores of Blaustein Centre scientists hang up their white coats and admire the dramatic desert vista — not viewing it as a cruel, dead space, but as an area of unending potential that will produce plentiful crops and comfortably house hundreds of thousands of Israelis in the years to come.

Science Features from Israel

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earth people write

Dear Keith and Irene,

The 50th issue of Earth Garden is certainly a cause for celebration. So many issues in society have been raised or buried and publications have come and gone but Earth Garden is still there as a forum for new ideas and valuable first-hand experiences provided by caring readers.

The information provided in Earth Garden over the past 10 years has been like a guiding light to us, supporting us in our trials and offering us the opportunity to pass on our experiences, both good and bad. The magazine has taught us many skills, from fencing and animal husbandry through to building and alternative power.

Jacqueline French's article in EG49 is typical of the experiences and frustrations felt by many of us in our chosen lifestyle. Thanks, Jackie, for letting us know that we are not the only ones to suffer 'building blues'.

It has just rained for the first time in two months and it really brings you back to basics — the patter on the roof, the smell of the first shower on dry grass, the thirsty earth drinking with the promise of the new life. We hope we speak for many readers in saying thank you, Keith and Irene for the last 50 issues. We hope that it has been worth it to you as it has to us and that Earth Garden continues for another 50 issues.

Peace and happiness, Chris, Rhonda, David and Jenni Martin, Coonabarabran, NSW.

Dear Keith, Irene & EG readers,

A wonderful thing has happened. On arriving at my Lake Cooroibah property the other morning, standing by the gate was my mower, books and other paraphernalia that had been unofficially borrowed by one of my camper guests (**Letters**, EG50). Only a few days before, **The Emerald Circle** had attempted to contact the borrowers by their unique method of meditation and telepathy. I believe this is another example showing how marvellous their results are.

As for Shirley and I, we've been having a very busy time since moving into the Noosa area. As usual things haven't gone to plan. We now find ourselves operating a small block of holiday units at Peregian Beach. What with trying to develop our budding plant nursery, running the units and looking after all the correspondence for the Circle, there's not a minute to spare. If I can get a free commercial into this letter, I can offer very low price accomodation to any EG readers passing through or holidaying in the area.

Best wishes to all, Ron & Shirley Haines, MS 1537, Lake Cooroibah Rd, Tewantin, Qld. 4565.

Dear readers.

Forest Edge is a land trust situated handy to the Bruce Highway and travellers are welcome to camp here on their way through. Facilities are simple and no rent is expected. Extended visits are possible and might appeal to people who want to save their dole to buy their own land or share somewhere.

I am a regional contact person for the **Australian Association of Sustainable Communities** (AASC) and can help anyone interested in settling into the area: Baffle Creek, Agnes Waters, Miriam Vale, Tannum Sands and Gladstone.

Connie Dalglish, Forest Edge, Bororen, Qld. 4678.

Dear folks,

I'm not game yet to go 'all the way', so I am working full time and trying to get my garden going on a part time basis. My poor old housework comes in a very bad last. Well, who likes it, anyway?

I only have black sand as soil so I have been bringing up seaweed from the nearby beach and putting that down first. I'm lucky in having a horse stable nearby and can take as much as I like which also helps.

My tomatoes didn't do well at all but my capsicums have gone mad. I have trouble with the little black ants all year round, so the smaller seeds get carried away. I overcame that with an old concrete wash trough full of mulch and grew my carrots in them. My lettuce, sweet corn, peas and beans have been so-so, but I'm learning and should get better.

Thanks for such a great mag. Wish I was just a wee bit more confident in myself then I would attempt a few more ideas. All the best for the next 50 issues.

Jill Curnow, Moonta Bay, South Australia.

Dear Jill — You could try one of John Guest's hints from Earth Garden 49 (page 44). To protect seeds from ants: before planting, rub the seeds with a rag soaked in kerosene — Irene & Keith.

Dear Irene & Keith,

The glycerine and borax I mentioned as a thrush cure in Earth Garden 50 (**A reader's story**, page 56) is already made up by the chemist, but you now need a prescription for it in Queensland. I have been buying it for over 30 years, but it was taken off the shelf about the same time as camphorated oil, which was also commonly used in many households for chest colds.

Sincerely, Chelmer Roots, Biloela, Qld.

Dear Keith & Irene,

Love your magazine! Please don't change too much. Your positive attitude to our times is so inspiring.

Best wishes, Cheryl Robinson, Maryborough, Queensland.

Dear Irene & Keith,

Thank you for the back copies of your magazine, it is a brilliant magazine and keeps my mind busy with all the information it contains.

We have bought 62 acres in Queensland and will move there next year sometime. We hope to be self sufficient and also earn an income. I am learning about pheasants and deer at the moment, so if anyone has any information, I would appreciate it. I have also been trying to find some information on making cane furniture without success.

Thank you, Sheila and John Keeley, 4 Teal Court, Wulagi, N.T. 5793.

Dear Keith, Irene & friends,

As a vintage tractor fan, I am researching the Lanz tractors in Australia. I would like to hear of anyone who has known of or seen any models of that now defunct manufacturer. Cathy and myself own a 1951 rubber tyred 6 speed tractor of the D9516 series. We would like to modify it using the crown wheel of a D8500 series tractor (crown wheel teeth = 80) and the matching driving gear. We need those gears to step up the road speed of our machine.

You see, Australia is a beautiful country, but you cannot see it if you are driving (you cannot keep your eyes on the road), so we want to drive our 'Bulldog' around Australia and visit tractor farmers who have used or are using those machines and take some photos and write up notices of men, machines and old homesteads.

We would like to hear from anyone who could help us with our project. We intend to start within two years and to be on the road for 18 months, give or take some months each way. We are also looking for sponsors to help us with the loan of a 28 ft caravan we could modify, radio communications equipment, solar and wind electrical generation, water tanks, fuel tanks, fuel waste oils (engine oils please), recording and film equipment and servicing facilities in most towns.

The 'Bulldog' engine will consume waste oils with 25% diesel added, hence the request for engine waste oil. We intend travelling about 200 km a day, unless we are in a very interesting area, farm or company.

Love & Peace to you all, Andre Maertens, 7 Elizabeth Street, Gympie, Qld. 4570.

BUY A SOLAR HOUSE

After 200 years in Australia, we have learnt to dress for comfort in our local climate, whether it's tropical rig in Darwin or thermal underwear at Thredbo. But despite the fact that the principles of passive solar design have been known for centuries, we have not yet adapted our houses in the same sensible way.

Side by side, little boxes made of ticky tacky line the *cul de sacs* of new 'instant' suburbs, lined up like soldiers in greatcoats. Uninsulated and incorrecty orientated towards the sun, they are uncomfortable hot boxes in summer and ice boxes in winter, expensive to heat or cool with fossil fuels.

With passive solar design a house can fit into its climate and make the best use of the energy of the sun to modify the excesses, with consequent savings on fuel bills.

Briefly, passive solar houses keep in the heat of the winter sun and keep out the cold with insulation (usually fibreglass batts) in the outside walls and roof, by storing heat in masonry such as concrete slab floors (thermal mass) and by using large areas of window glass to the north, but little or none on the east and west.

If you are building your own home, you should find out about these simple design principles before you start looking for land. The Australian book which has the most information on the subject is **Australian Solar Houses**, by Matthew Parnell and Gareth Cole, published by Second Back Row Press, P.0. Box 43, Leura, NSW 2781. Price $12.95 (add $2.00 for postage). It shows also that solar houses are far from being a dream, with plans, photos and details of 72 existing solar houses around Australia.

Passive solar houses are comfortable to live in, energy efficient and fit in particularly well with owner built homes made of natural materials such as earth, stone and timber.

Not everyone has the energy, time or knowledge to build their own own solar house. For these people, good quality solar homes are now available as fully completed 'project' homes or as kits which may be built partly or wholly using pre-cut materials, architect designed plans and building instructions. Details about four companies involved in the new field of designing and building solar houses follow. *Buy Australian!*

At home with the sun

SUN EARTH HOMES

Earth walls make an ideal *thermal mass* — a medium in which to store the sun's heat gained during the day through the windows of a passive solar house and release it again slowly at night.

These natural attributes of the sun and the earth have been put together by Sun Earth Homes in designs which combine correct orientation to the sun with the insulating properties of earth bricks made on the site. This ensures an even temperature in the home all year round.

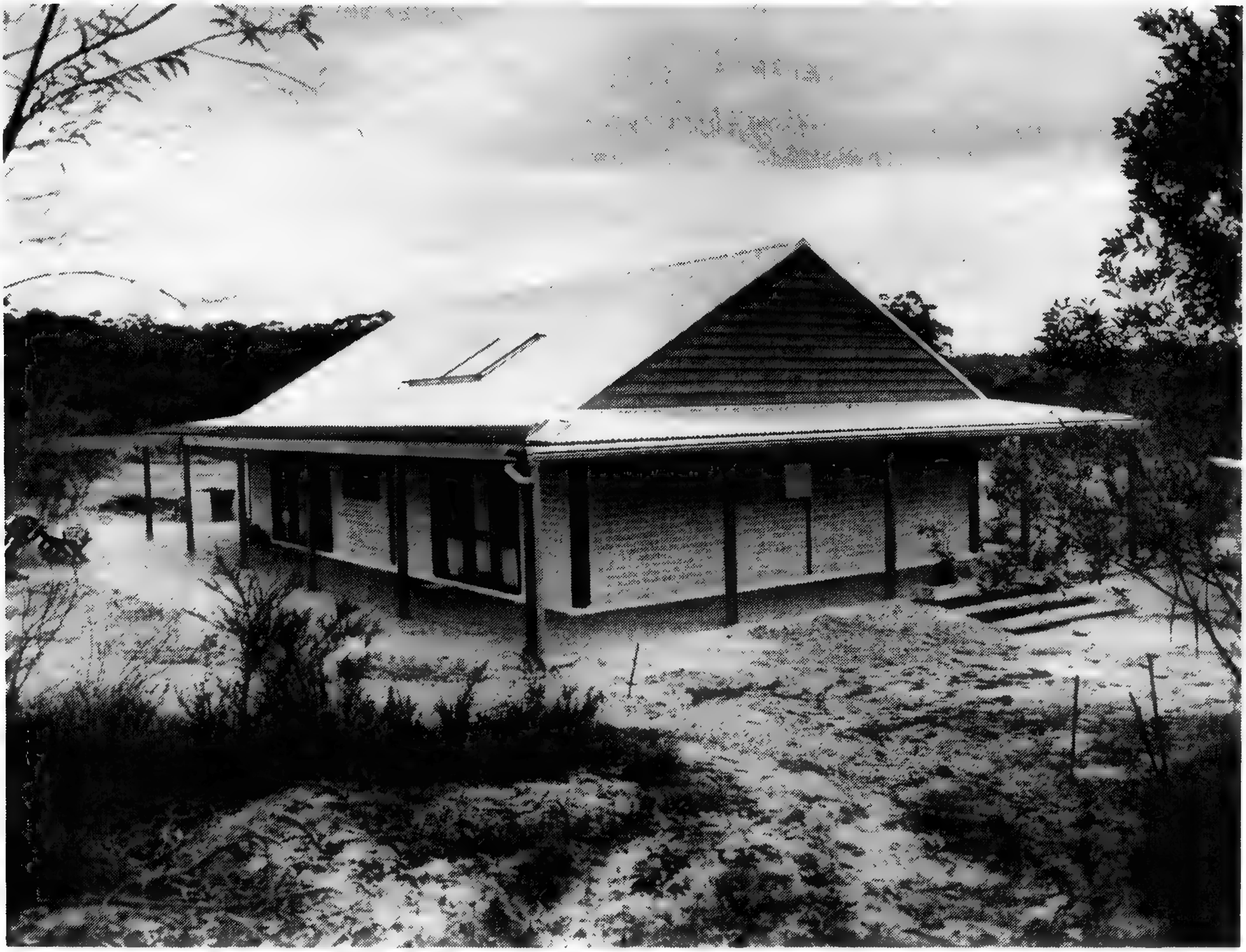
There are currently 46 Sun Earth homes under way, each custom designed by architect David Baggs, winner of the *HIA* award in 1985 for his solar home at Cherrybrook (Sydney). Most are being built outside metropolitan areas and the majority have an Australian colonial look with features such as verandahs and clerestory windows.

You have the choice of building your own Sun Earth home from the plans and a pre-cut, pre-fabricated package delivered to the site, having your house completely built by a master builder, or sub-contracting to tradesmen up to any stage. The cost of the components package of the smallest home so far was $14,000 and for the biggest $65,000.

After you discuss ideas and rough costs, an architectural sketch plan is prepared at a cost of $300 (for a 15 square house) to $500 (for a bigger area). Sun Earth lodges a building application and plans with the Council on the client's behalf and provides technical advice. Working drawings of 1:5 scale are provided as well as a full components schedule and step by step construction manual which includes instructions for roof and floor framing.

All timber components are pre-cut and include roof beams or trusses, battens, rafters, Western red external doors and cedar windows (glazed), external wall posts, beams, verandah posts, ceiling battens and pine shiplap (where specified). All roofing materials, gutters and downpipes for the house and verandahs are included. Bathroom and kitchen fittings are not included.

Sun Earth Homes have done a number of totally self contained (or autonomous) homes. They can provide



fireplace wetbacks, *Beasley* solar water heaters, photovoltaic panels or a solar electric system if required.

James Firbank, an engineer, provides the expertise in soils engineering required for the machine made compressed *Terra Firma* earth blocks used in the internal and external walls of Sun Earth homes.

The earth blocks are made from drier subsoil than traditional puddled mudbricks. This soil, stabilised if necessary, is compressed under a120 tonne force to produce consistently regular shaped, sharp-edged blocks with beautiful colours which blend in with the landscape around them. Like mudbricks they are fire resistant, absorb sound and resist water penetration, but they are denser than mudbricks, so provide more thermal mass.

External or loadbearing walls are 250 mm (10 inches) thick and internal walls are 170 mm (7 inches) thick. The *Terra Firma* machine can produce about 5,000 earth bricks (equivalent to 17,500 fired clay bricks) from soil on the construction site.

If you would like to see a Sun Earth home, there is a seminar and bus tour to completed homes each month.

The single storey, two bedroom house shown in the photograph was one of the first to be completed by Sun Earth. In the Windsor area, west of Sydney, it is103 square metres (12 Imperial squares) with 85 square metres of verandah all around.

Cost of the components for the house, built on a concrete slab, was around $23,000. It would cost about $55,000 when built by a professional builder.

The house has full brick internal and external walls of compressed earth bricks and is fully insulated.

The slate floor and earth brick walls provide thermal storage. The long axis runs east to west for optimum solar gain. There are no windows on the east or west sides, smaller windows to the south and larger windows with glass French doors facing north. Louvres over the verandah on the north side preserve the Australian Colonial look, while shading the verandah in summer and allowing the sun to penetrate well into the home in winter. Ceilings are of raked pine.

◦ **Sun Earth Homes Pty. Ltd.,**
Unit 8, 21 Tepko Road, Terrey Hills, NSW 2084.
Phone (02) 4502522.

EG 50 CORRECTION

In **Healthy Sweets**, page 9, please add to ingredients of Chocolate Crunch 1/2 cup sugar (sorry Marja).

The self-sufficient house

ACACIA KIT HOMES

A self sufficient (or autonomous) house by definition must provide its own heating, power and lighting, with no input from 'outside' mains services of gas, water or electricity. Instead it relies for its lighting, cooking, heating, water supply and power for radio, television and household appliances on the natural, renewable sources of its immediate environment, the sun, wind and rain.

Now for the first time in Australia — and probably the world — you can build such a home yourself from a kit (for about $33,000) or have one built for you on your land (for about $60,000). It will allow your family to live comfortably in the most remote place with all the usual 'mod cons' — and never pay a fuel bill again.

The house, designed by Acacia Kit Homes with assistance from the Victorian Solar Energy Council, is called, appropriately, the *Self Sufficient House,* or the LE100 C. The company has already built a display house at Bittern, on the Mornington Peninsula, south of Melbourne.

The house produces its own electricity from photovoltaic panels mounted directly on its clerestory roof, with battery storage and an inverter to provide normal 240 V AC power. It is fully insulated and designed for energy efficiency.

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Domestic water is heated by efficient squat solar collectors on the rooftop, with a wood heat backup provided for winter. Water saving shower heads and other efficient plumbing equipment has been fitted for use where there is no reticulated supply.

Acacia Kit Homes specialises in the design and manufacture of energy efficient and space efficient housing and has won a total of 17 *5 Star Design Certificates* for its passive solar houses, all of which are certified for climate codes 'M' and 'W', which allows full coverage for Victoria, southern New South Wales and eastern South Australia. Last year the company won the Melbourne *Herald /HIA* Top Homes competition in the Manufactured Housing section for Kit Homes with their LE72 passive solar kit home.

Since then, says managing director, Philip Stafford, Acacia Kit Homes has received many enquiries about producing a house suitable for remote locations where there were no mains power or reticulated water. "We decided to start from the ground up and design a house that was not only as energy efficient as possible, but would also produce real savings in water usage and simplify construction to a stage where the house could be built without the need for the use of power tools during construction," he says.

Design. The design of the Self Sufficient House started with the basic shape. Its length-to-width ratio is 1.43:1, which in terms of ratio of external wall area to floor area is within 1.5% of absolute minimum. The ceiling height has been kept to the minimum allowable under the Victorian building regulations so that the volume of air to heat in winter (or to replace in terms of summer cross-ventilation) is also a minimum.

The clerestory roof, angled at 39° off horizontal and facing north provides direct support (without unsightly support brackets) at the correct angle for efficient winter operation of solar hot water collector panels and an array of photovoltaic panels. The clerestory windows face south to provide light and ventilation to the centrally located bathroom and toilet. These high level windows also provide natural convective exhaustion of steam from the bathroom without the need for an electric fan.

The house is based on a 100 square metre floor plan, with three bedrooms, two living areas and a bathroom with access from the house and the master bedroom.

Insulation. The house is fully insulated with double sided aluminium foil in the walls and roof, R1.5 batts in the external walls and R2.5 blanket insulation in the roof.

Draught seals are provided to the toilet, bathrooms and laundry doors and a weatherseal is fitted to the south external door. All windows are fitted with sealed pelmets to reduce night time convection loss through the window glass.

Shade. A pergola with fixed battens provides shade control to the north side of the house.

Solar hot water. The 400 litre hot water tank is located at the rear of the clerestory and elevated inside its housing for effective thermosyphon water heating from the *Somer Nova* squat solar collector panels. This position is also the minimum supply distance to each hot water outlet in the house.

Mounting the solar collector panels on the clerestory roof reduces the effect of wind cooling from the prevailing southerly winds which normally affects panels mounted on legs on a rooftop.

Wood heater. The solar hot water system is backed up in winter by an *Arrow 1800* wood stove fitted with a ladder type water boiler manufactured by *Enercon* in Victoria, which also provides heating when there is no sun to heat the house.

Water saving. The house has been equipped with water saving fittings to reduce the amount of water consumed, which will be a great help in areas without a normal water supply. These are: a non-drip aerated shower head in the bathroom, similarly fitted water taps, a 6 pint cistern and pan in the toilet and a suds saving trough in the laundry. The hot water tank has been carefully positioned to reduce the amount of water lost from the system while waiting for the heated water from the hot tap.

Solar electricity. The solar electric system is made up of an array of ten 42 watt *Solarex* photovoltaic cells connected in series/parallel to provide 24 V DC at up to 13 amps to charge a bank of 12 *Chloride Faure- X* 660 amp hour 2 V deep cycle cells, via a *WEA* shunt regulator.

This regulator is soon to be replaced with a four step regulator which will direct unused power generated by the solar cells to an electric hot water element in the solar hot water return line.

The household electricity runs on 240 V AC off a 2.5 kVA *WEA* inverter. Fluorescent lighting is used in all habitable rooms and incandescent lights are used in service rooms.

Appliances. The system has been designed to run the following appliances:

- Lights for the whole house, 2-6 hours per day.
- 10 lb automatic washing machine, 7 loads per week.
- Steam iron, 3 hours per week.
- 14 inch colour television, 35 hours a week.
- 100 W stereo, 14 hours per week.
- Microwave oven, 2 hours per week.
- Sewing machine, 2 hours per week.
- Video recorder, 7 hours per week.
- Vacuum cleaner, 1.5 hours per week.

Based on these loads, the solar array can support this system with a battery backup period of approximately 8.5 days. If an electric refrigerator was added, the battery bank and inverter could handle the additional load, but a further four solar panels would be needed and the backup period would be reduced to 5.5 days.

The batteries, inverter and regulator are housed in a ventilated cupboard in the laundry. This was done to allow all weather 24 hour access to the electricity system without the need for ventilation affecting the passive solar operations of the house.

The house has been wired to SECV requirements. The company also had the wiring inspected by the authority. “We feel that although inspection and approval of remote power systems is not mandatory, it is extremely desirable,” Philip Stafford told us, “especially when one regards the possible liability in terms of fire damage or personal injury occurring in a dwelling not covered by the safeguards built in to the State electricity inspection system.”

The Acacia Kit Homes LE 100 C, a truly self-sufficient solar house, independent of all outside services.

- For further information on the *Self Sufficient House* and other kit houses, contact **Acacia Kit Homes,** 451 Stony Point Road, Bittern, Victoria 3918.

IN THE DARK ABOUT SOLAR ENERGY?

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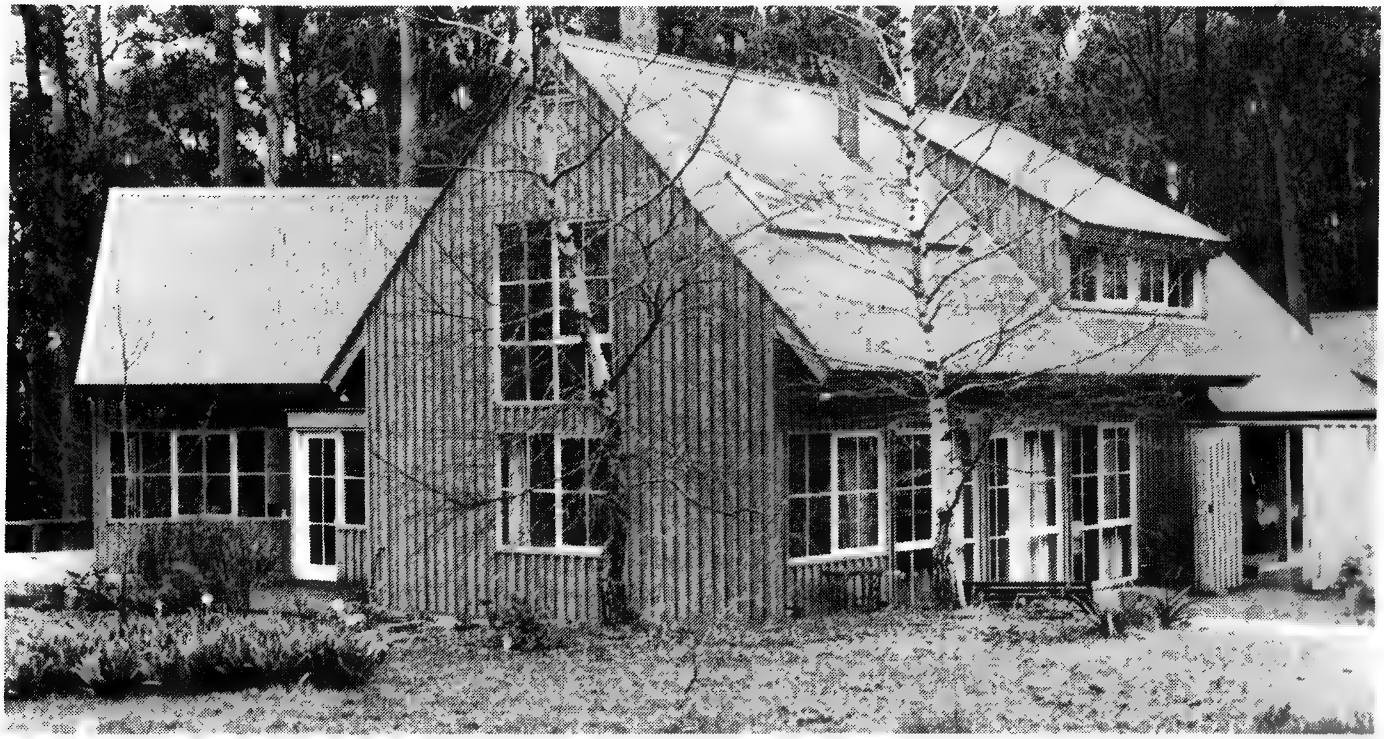
270 FLINDERS STREET, MELBOURNE. 3000.
PHONE (03) 654-4533.



BIG & LITTLE SOLAR HOUSES

In the past six years Big & Little Solar Houses have constructed over 150 custom designed, energy efficient, passive solar homes in Australia.

Big & Little is aptly named. They design and package both Big Solar Houses, priced from $100,000 to $300,000, or Little Solar Houses, priced from $48,000 to $98,000. In size, their solar houses range from a little120 square metres to a big 380 sq. metres.

All homes are two storey buildings with post and beam frames, but designs are modified to suit the client's needs. Typical inclusions are exposed oregon posts and beams, cathedral ceilings lined with radiata pine, open galleries and fireplaces. Exterior cladding options include timber walls and metal roof or brick walls and tiled roof.

After the basic design, you can either buy a materials package to build your own home, ranging from $22,000 to $72,000, or purchase a fully built home for between $42,000-$125,000.

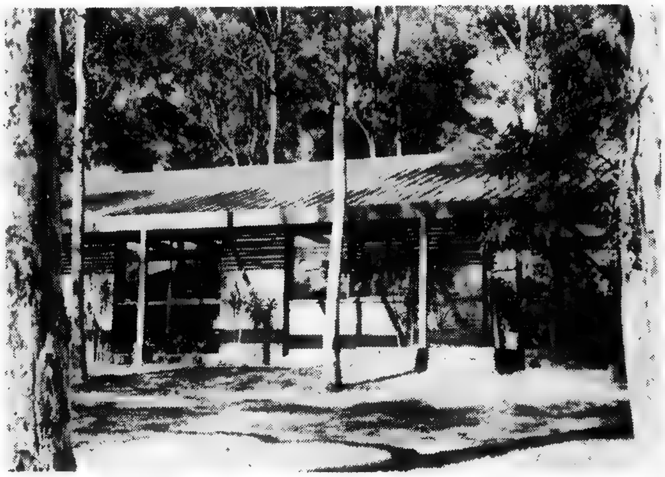
° Further information from **Solar Lifestyle Pty. Ltd.**
P.O. Box 25, Forrestville, NSW 2087.

MERCHANT BUILDERS

Merchant Builders offer 'off the shelf' project homes with all the basic passive solar energy saving design features included in the price. You can get expert advice on siting your home, layout of the rooms and windows and which materials to use for floor and wall coverings.

You have a choice of building your own house or having it built completely for you. Other options are to build, sub-contract to lockup, or fully sub-contract all building. Construction materials are delivered to your site pre-cut with wall frames assembled, window frames glazed and assembled, ridge beams and roof members cut to size and notched, with full plans and a detailed illustrated construction manual.

Attractive and functional kitchen cupboards and vanity units are pre-assembled and baths, laundry trough, taps and wardrobes are included. There are standard modular designs for the Pavilion, Studio, Courtyard or Garden houses, which are varied to suit the client. Typical inclusions are high timber lined ceilings, Western Red cedar windows, exposed oregon rafters, courtyards, split levels, pergolas and sliding glass doors. It's worth taking a look at the company's display houses.



° Further information from **Merchant Builders Pty. Ltd.**
6 Murphy Street, South Yarra, Victoria 3141.
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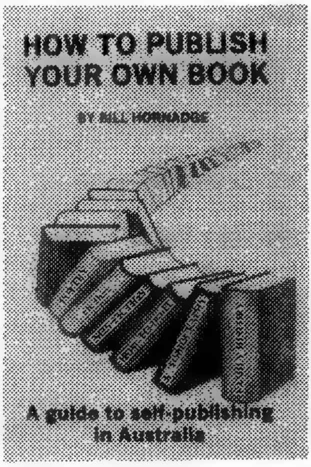
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A SOLAR HOTHOUSE

SOLARIUM HEATS THE HOME

By Dr. Robert Rich

There is a lot of information available on passive solar or energy efficient design in free or cheap leaflets from the CSIRO Division of Building Research, the Cement and Concrete Association of Australia, energy authorities like the S.E.C. of Victoria and the Australian Institute of Architects. None of these mention the **solarium** or **solar hothouse** as an integral part of the house.

This is surprising, because a solarium is a versatile house heater with many benefits. Here are some uses, tested and found to work at Moora Moora Co-operative in Victoria:

Air lock. A hothouse is a warm, dry winter entrance where people can enter without losing heated air from the house and take off their coats and boots in comfort.

Drying area. Firewood and wet washing seem to find homes in hothouses.

Living area. In other houses, the solarium is used as a pleasant winter daytime living room, for example with a ping pong table in the middle.

House heater. This is the primary function. Even on an overcast day, a hothouse picks up daylight and turns it into warmth. As long as the air in the hothouse is not too humid, it can be vented into the house via an open door, or top and bottom air vents. This is a no-cost source of heat all winter.

House cooler. A solar hothouse on the north side can be combined with a cool, moist area to the south of the house, for example a grove of trees and shrubs, or a fernery. Air in a shaded, damp place is always significantly cooler than in the hot sunshine, so sucking air into the house from there has the same effect as an evaporative cooler. Suction is provided by the solar hothouse if it has a roof vent (**Fig. 1**). Hot air in the solarium rises and escapes through the roof vent. This sucks air from the house, setting up a draught.

Construction

The hothouse needs to be on the north side of the house, where it will not be shaded out in winter by other parts of the house, or by external objects such as trees, fences or neighbours' houses. Summer shading is an advantage. This can be achieved by the use of shadecloth fixed over the top every summer, deciduous plants, or even a stand of tall trees with foliage only at the top (winter sun comes in between the trunks, while summer sun, being high in the sky, is cut out by the leaves).

Walls and doors should be of glass or other material that is transparent to visible light radiation but opaque to longer wavelength heat radiation. The roof should also be designed to let in light, which can be done in a number of ways:

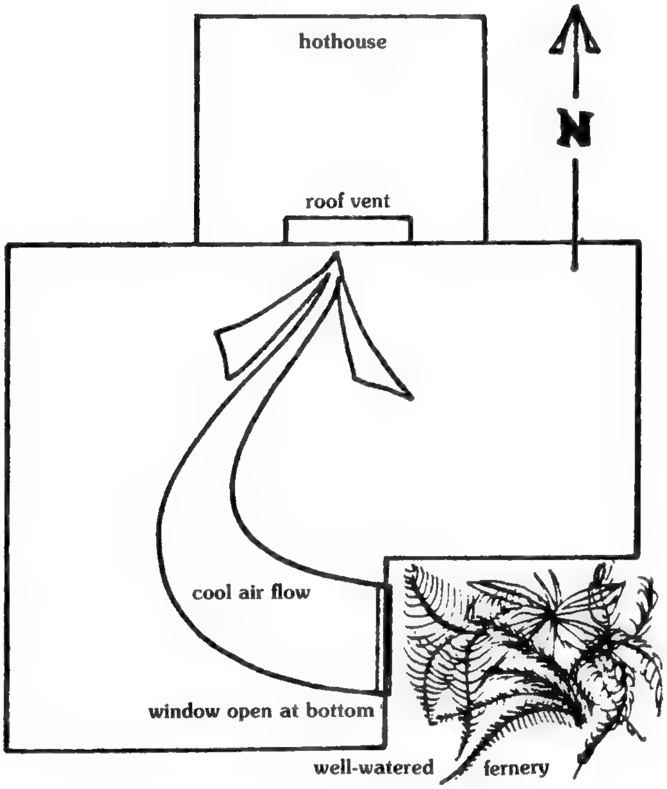

Fig. 1. Solarium as a summer cooling device.

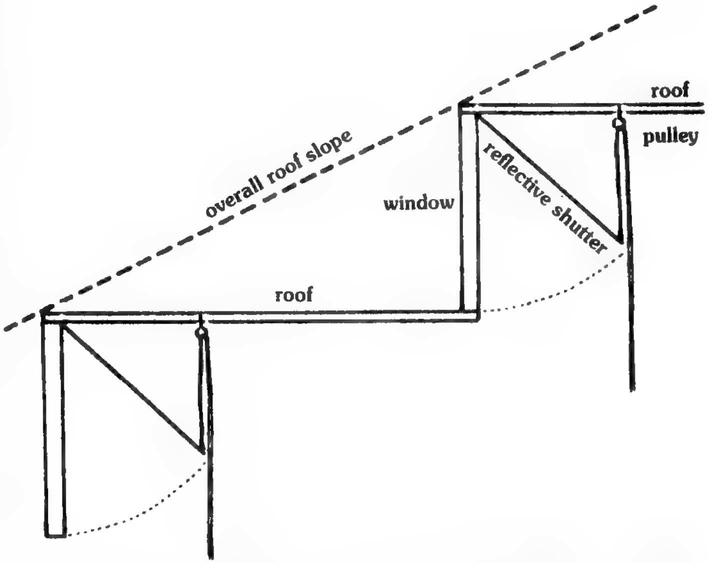

Fig. 2. A series of levels of vertical windows will let in a great deal of light — 45^0 reflective shutters direct this light down into the hothouse.

Corrugated fibreglass or similar materials such as perspex are often used. They work very well. However, these materials become very brittle over time from ultraviolet light. Also, in my opinion, their use should be forbidden in bushfire prone areas. The plastic matrix of the sheets is easy to ignite, is a good fuel in its own right and burns with a choking black smoke.

Toughened glass. Occassionally you can be lucky enough to pick up free or cheap toughened glass. I got five big panels through a friend who had access to a 'production overrun'. Someone I know made a hothouse roof from panel van side windows which had warped during manufacture. Note that toughened glass can't be cut, but must be used with the manufactured sizes and shapes.

Plate glass. Recycled shop windows, windows from air conditioned high rise buildings and glass office partitions make excellent hothouse roofs if you can get them cheap. One warning: avoid tinted glass, which cuts out precisely the wavelengths you want to admit.

When using recycled glass, it is essential to obtain the glass first and design the size and roof structure to suit. Otherwise you might have to finish the job with prohibitively expensive new stuff.

Windows and mirrors. A transparent roof can be replaced by several rows of vertical windows separated by near-flat roofs (**Fig.** 2). Each window has a top-hinged reflective shutter, which can be made vertical so that summer heat is reflected back out, or at 45° to get light and heat in. Such a system admits more than enough light to make the hothouse work, without the problems of a glass or fibreglass roof.

Reflective shutters consist of timber or plywood backed carrying mirrors (expensive new, often free if old, but heavy); stainless steel sheets (e.g. draining boards cut off old sinks) or even reflective foil renewed each autumn (it oxidises to a dull grey over time).

If the climate of your location is cool enough to require a fixed heater of any kind, it is cool enough to benefit from a solarium: a heater with zero running costs.

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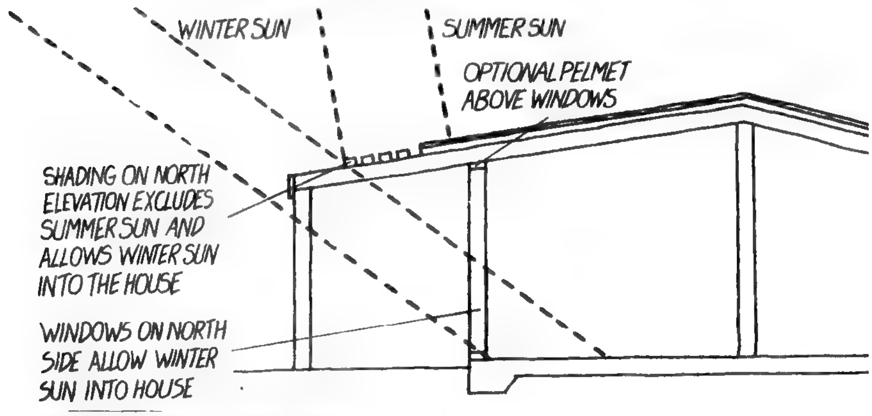
PASSIVE SOLAR GLOSSARY



WINTER SUN
SUMMER SUN
OPTIONAL PELMET ABOVE WINDOWS
SHADING ON NORTH ELEVATION EXCLUDES SUMMER SUN AND ALLOWS WINTER SUN INTO THE HOUSE
WINDOWS ON NORTH SIDE ALLOW WINTER SUN INTO HOUSE

Active system. Solar heating (or cooling) system which requires mechanical power to distribute collected heat.

Clerestory. A vertical window placed above the line of vision, usually at the intersection of two roof planes, to provide natural light, heat gain and ventilation.

Heat gain (or solar gain). An increase in the amount of heat contained in a space due to sunlight (through windows, etc.).

Heat loss. A decrease in the amount of heat contained in a space, as heat flows through, walls, windows, roof and floors.

Insulation. Material, such as fibreglass batts, which resists heat transmission and so reduces heat loss or gain.

Orientation. Siting and alignment of a house so that north facing windows or skylights take winter sun into living areas and keep out peak summer sun (using window overhangs, etc.).

Passive system. A solar heating or cooling system which uses natural, or passive methods (with no moving parts) to distribute collected heat.

Solar radiation. Heat or energy given off by the sun.

Solarium (or hothouse). A glassed in room or area which captures solar energy to heat a building.

Thermal mass. Masonry (stone, slate, concrete, mudbrick, rammed earth, earth brick) used in floors or walls to store heat from the sun.

Freelance writer

By Sophie Masson

For many people a country life means having to forego a full time job and the regular, reliable income which it offers. But if you're independently minded, have initiative and self discipline and enjoy writing, then you could satisfy both soul and wallet (though you won't become rich!) by working as a freelance writer.

I've never liked the thought or reality of a full time job. Working for others, keeping to others' decreed routines, that has never been for me. I am impatient at the time wasting, chafing at the bit, eager to get on with my own work.

For years I've scribbled. Since writing fairy stories for my siblings at school to writing self-conscious poetry at university, I've filled dozens of exercise books. But it took me a long time to realise that these interests — perhaps even these talents — could actually allow me to escape the wage slave existence which I dreaded. It took me a long time to know that I can earn my living anywhere, whether in the bush or the city, with my ability to string words together.

I'd always been a writer of fiction and poetry and in my arrogant younger years scorned the thought of journalism and the frenetic hunt for story after story after story. But one day it clicked ... I could still write about the things in which I was interested , travel and people and society, be paid for it and also be able to write brave little attempts at the Great Australian Short Story. So I put together my first piece on Basque Cooking (the Basque region, on the south west Atlantic coast of France, is where my mother comes from) and sent it on its hopeful way to *Vogue* in Sydney. Lo and behold, it came back with an acceptance and terms of payment! From then on I was launched, and hooked; the accumulated experience of my 26 globetrotting years flooding in as material.

Although I write very quickly, I usually think about a piece for some weeks before writing anything down, when I have had a chance to analyse experiences and situations. Since last year, too, I've worked for local papers and organisations, such as the Armidale City Council and the University of New England, on a freelance basis. A full time six month stint at a weekly paper in Coffs Harbour gave me Australian Journalists' Association grading and experience of everyday newspaper work, plus a working knowledge of computers.

All my income comes from writing; regular work at the local paper, less regular but still reliable income from national publications. As well as the money, there are a few perks in journalism; free books and records to review, free tickets to plays, concerts and the like. It's the perfect way for me to earn a living and I can certainly recommend it to anyone of like mind — the sense of independence is very precious. It is a profession that can be practised anywhere, but you must love writing to do it, for sometimes the mental exertion of it can simply seem a chore.

And yes ... I am still writing poetry and short stories, and even working on a novel!

Some useful tips for beginning writers:

1. Keep your eyes and ears open for anything which may make a story. Overheard conversations, newspapers and magazines, your own experiences, or other people's — these are all rich sources for stories. There are literally billions of potential stories in the workd. I despair of getting all my ideas down on paper!

2. Allow your personality to come through in your articles and start off by writing about what you know. It will have a greater ring of truth then, and involve your readers more.

3. Study the markets you are hoping to enter. It is no use sending off unsuitable material. And don't neglect local outlets — they can provide your bread and butter as well as some of the marmalade!

4. Invest in a good typewriter. Mine is electronic, bought with a particularly successful article! Some people like to use computers, but for the beginner I think a good manual typewriter is quite suitable. You can claim depreciation on your machine against tax.

5. Get a routine going. I start the day at 8.30 a.m., when the house is quiet, work for a few hours, then do a few aerobic exercises, have a cup of coffee, go for a walk, then come back refreshed, work till lunchtime, when I have another break, then work for two or three hours in the afternoon. After some more exercises, the typewriter is shut away for the day. It is most important to do regular physical exercises, which help to keep you fit and alert. It can also blow away those cobwebs which intense mental activity can lodge in your overtired brain.

Don't work like a fanatic and always set aside a couple of days — at the weekend for example — when you do no writing at all, not even letters, or you risk burnout. My family keeps me sensible on this point!

6. Get used to sending out clear, legible, photocopied stories. Never send an original, as it could be lost. You must always send a stamped addressed envelope with your work, to enable the editor to send back unsuitable material quickly. Keep a note of your photocopying costs, as well as receipts from postage, for tax purposes. Always address the editor as Dear Sir/ Madam, unless you are absolutely sure as to their sex. Include a little bit about yourself in your covering letter, but not your life history.

7. Don't get too depressed about rejections. Try, try and try again!

Vegie basics

By Jacqueline French

One of the most common mistakes of new vegetable gardeners is to start out too ambitiously: dig up everything in spade reach and plant out enough varieties to fill a catalogue.

By midsummer the vegetables are starting to look spindly and weed choked and by autumn there are just a few green tomatoes and yellowed silver beet stalks staring up through the grass. It's a case of too much crammed in too soon.

Continuous harvesting. These suggestions are for beginners, or anyone who has little time but still wants a basic vegetable garden, one with a small range of varieties planted in spring and continuously harvested for the rest of the year, a basic and continuing store of living vegetables.

The following vegetables can all be planted at the beginning of the growing season and harvested from then on: silver beet, spring onions (just eat the green tops and leave the roots to resprout) and parsley.

To this add celery which, while it needs more pampering than other plants, will also crop continuously for a year once it is planted. Actually, this bad reputation isn't deserved. True, celery does need adequate fertiliser and water if you're not going to get thin, stringy, pale green sticks instead of thick, succulent celery. But there's no magic about it. Just keep adding water and liquid manure such as urine diluted 1:10 with water (daily), or manure soaked till the water is the colour of weak tea (every week or so) till the plants are looking healthy.

If you're short of water, or the sun is glaring down and crisping the grass, mulch the celery, or plant it in a trench, about a hands depth down, and gradually fill the trench in with mulch as the celery grows.

Add broccoli and cauliflower to the list of continuous harvest plants. Conventional gardening wisdom is to treat broccoli as an autumn and winter crop, planting it in midsummer to harvest only in the cool weather. This method certainly produces the best looking Broccoli, but not the biggest crop.

Plant Broccoli to time the first crop for cool weather if you wish (about four and a half months from planting), or plant out seedlings in the spring when you set out most of your garden. Broccoli planted then will crop a bit faster, perhaps two weeks or even a month earlier than later sowings. The stalks you pick won't be so big, just thin stalks which must be picked at once or they will be tough. However, these stalks will keep appearing throughout the year. All you have to do is keep fertilising the bushes and keep picking. The main danger is to let the broccoli go to seed as this will stunt production and toughen the whole plant. In hot weather daily picking is essential.

Cauliflowers can also be planted in spring and continuously harvested. Choose a variety like Paleface, which matures in about five months. Once the main head appears pick it normally, but leave the stalks in the ground. Water and fertilise like any other vegetable and a ring of smaller caulies will grow just under where the main head was. Cut these in turn and you should get up to half a dozen cuttings of progressively smaller caulies from the one plant. They will keep going after a year, or even two, but I've found that after 12 months or so the stems are more likely to rot and can sour the ground around.

It's better to have a small, intensely planted, continuously cropping garden bed than one which is so much trouble to keep up that it becomes neglected. The great advantage of the continuous harvest bed is that you're always ducking down to it to pick something or other and the more often you visit a garden bed the less likery it is to be neglected.

Self seeding bed. The easiest garden bed is the self seeder. Try this only after a few years, when you're sure your bed is weed free and fertile. The aim is to plant crops which reseed themselves with the minimum of work on your part. Vegetables in this category include: parsnips (the only way I manage to grow parsnips is to let them reseed because the usual bought seed is too stale to germinate), red Mignonette lettuce or Cos (which will heart throughout the year), leeks, silver beet, spring onions, parsley and celery.

Leave some of all of these in the ground to go to seed and thin them if you want to when the seedlings pop up. In most cases the stronger plants will crowd out the weaker anyway. Leeks and celery may be thinner when grown in a mob, but provided the soil is kept moist and fertile, they will possibly be more tender than if they were grown conventionally.

Tomatoes can be grown year after year on the same ground too, as anyone who has hauled out bunches of tomato seedlings from last year's patch can testify. But tomatoes are prone to a variety of wilts (fusarium and verticulum) and other diseases. One way to counter these is to spread a sheet of clear plastic over the old tomato patch in spring. The heat under the plastic should clear up your problem and, while it will also kill off most of your tomato plants, there should be enough left buried more deeply to germinate later.

Potatoes can also be 'bandicooted', that is, never remove them entirely, just dig a few tubers when you need them from under the plant. Again the problem here is disease. I've known one bed, a neighbour's, produce without problems for over 10 years. The answer is probably to change your potato seed and the position of your potato bed as soon as any disease appears, or aphids, which carry the worst of the potato viruses.

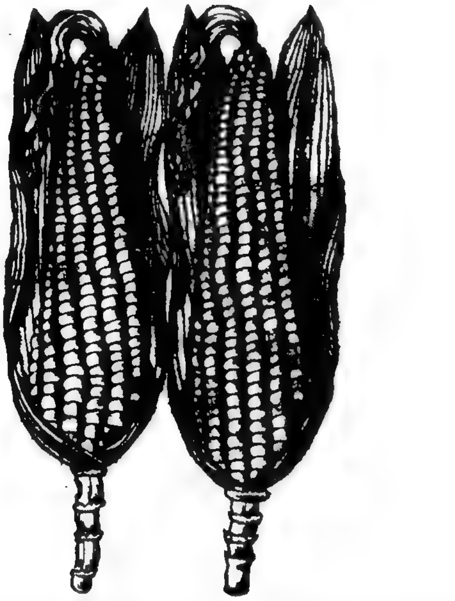
Other crops will come up again, but aren't so reliable. I've got radish in their sixth generation now (white and long red), Purple King beans and a few broad beans straggling up through the corn. Capsicums and eggplants are said to grow again if you mulch their cut-down stems in winter, but I've never had success with this. I think it's too cold here (Southern Tablelands of NSW).

It's hard to go wrong with vegetable gardening if you follow a few rules. Prepare your bed well and feed the plants well, remembering that the more you pick, the more you will need to fertilise. Organic fertilisers are best and most trouble free ... a steady breakdown of nutrients from mulch or compost without the jolts of lean times and nitrogen rich flushes that more soluble fertilisers give, leading to weak, sappy, pest-prone growth.

A pot garden. For people without access to a patch of earth, quite a good harvest can be gathered from a garden in pots. Silver beet, herbs, Tiny Tim tomatoes, eggplant, capsicum, potatoes, celery, bush pumpkins, bush zucchini, bush cucumber and any of a range of special miniature vegetables, can be grown on a patio or even a sunny window ledge. A dozen pots, preferably of continuous cropping plants to maximise the harvest, can provide a considerable bounty, often without the weed problems of an in ground garden.

The main disadvantage is the need for constant watering, as above ground pots dry out faster than those growing in the soil. One thing tyou can do is to pack the pots wrapped in newspaper in an old wooden or styrofoam box and keep the newspapers wet as well as the pots, though this might be unsightly for anyone who simply fancies a pleasant, rampant vegetable harvest in pots on their patio.

Corn is King



'Yellow Turkie Wheate' from *Gerard's Herball*, first edition, 1597.

By Jeannie Killer, Bundaberg, Queensland

I have just been reading, again, my copy of HARD TIMES HANDBOOK. I always find something new and interesting in it, specially the recipes, as that is a great interest of mine — cooking yummy meals out of very little, just what I happen to have in the house at the time. There's never any left, which is my reward.

Being farmers does help. Last November we grew rockmelons for market and experimented with growing sweet corn. Well, what fun! The rockmelons and the sweet corn came to maturity together and as we couldn't afford to pay wages to pick both crops, it meant I was working a 'double shift': rockmelons early morning till mid afternoon and corn picking and packing till 8 p.m.

Our roadside stall

This was very tiring and little return, till we (son Mike and I) talked the boss (Jock) into putting a stall out the front of the house. We live on the main road from the coast to the city so after much talking and cajoling he finally agreed. Wow! The corn was really beautiful and the people of Bundaberg soon got to hear about the 'cheap corn going on Bargara Road'. Mike and I picked the corn, topped and tailed it and packed it into plastic bags, twist-tied and refrigerated overnight. We just stripped one 'windrow'

Next day we put out the big Esky with some frozen bricks under the tree in the shade. The signs were bed ends, reading 'CORN — 4 COBS for 50¢' in Mike's childish printing. The customers rolled in. They were knocking at the back door or just tooting the horn for more and we just couldn't keep the corn up to them. We even had people driving up through the farm to where we were packing the melons, so in the end we told them to help themselves.

We had rockmelons for sale too, good rejects, and there were heaps of them. So, all in all, I really enjoyed the roadside selling stall and still have friends asking "When are you going to grow some more corn, Jeannie?"

What really amused us one evening was a man and woman stopping their car, on dusk, jumping out with a bucket each, ducking in the corn patch, filling up the buckets as fast as possible, then taking off at high speed. Poor people, they were welcome to it if they were that hungry. Another couple of hitchikers also benefited, so we were pleased they had a feed.

Sweet corn is such beautiful healthy food. The grubs think so too, but you just chop off the 'grubby ends'. I really believe that sweet corn is just so good for us. It gives energy, is fibrous and so tasty! Our chooks and even our dog love the left-over hard cobs, devoid of grain. I feel all our earth gardeners would benefit from growing sweet corn in their gardens. The stalks and husks dug back into the soil make beautiful mulch and you will find that seed from unused cobs keeps popping up for another crop.

Picking

It's hard at first to determine when to pick sweet corn. We learned by trial and error but soon got the hang of it. The tassel at the end of the cob turns a chocolate brown, the cob when squeezed gently feels firm and you can feel the shape of the kernels inside the husk.

Also by pulling the husk gently away, the colour of the kernels should be a lovely yellow; creamy yellow in the young stage, turning more golden on maturity. The corn stalk itself starts to dry out somewhat as the cob ripens. Finally, the *drying out* of the tassel on the end of the cob is the definite sign of maturity, when the cobs are ready to pick and devour.

Cooking

It is most important when cooking your own corn cobs *not to add salt*, because it toughens the kernels. Add sugar or honey, if desired. The basic method is to use a large saucepan with a lid, bring the water to the boil, put in the cobs and return to the boil for about 8 minutes. Then drain and cool.

Out of season, I buy the frozen packs of *cobettes* (only Australian ones), which we use as a vegetable at least once a week. These recipes are all old favourites of mine.

CRUNCHY CORN FRITTERS

We used two cobs of corn to get the two cups of kernels required for this recipe. The fresh flavour is worth the extra trouble.

1 cup plain flour
2 eggs
1/2 cup milk
1/2 cup cream
2 cups fresh corn kernels
1/2 cup chopped shallots
1/2 cup greated cheddar cheese
2 tablespoons oil

Sift flour into bowl, stir in combined eggs, milk and cream, beat until smooth. Stir in corn, shallots and cheese. Heat about 2 tablespoons of oil in a heavy pan, drop a tablespoon of the mixture into the pan and spread it out slightly. Fry until golden brown on both sides. Makes about 30 fritters.

CREAM OF SWEETCORN SOUP

45 g (1 1/2 oz) butter
1 onion, chopped
2 potatoes, diced
1/4 cup plain flour
bay leaf
salt & white pepper
2 tablespoons cream
crumbled fried bacon (garnish)

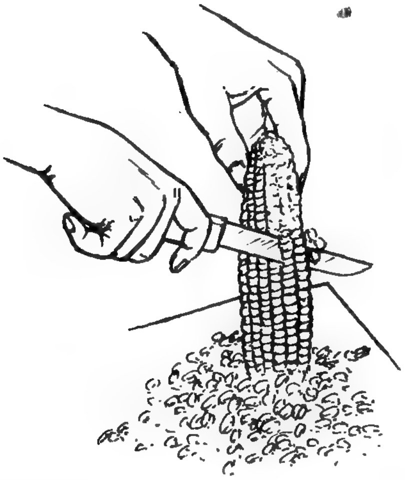
3 cups milk & juice of sweet corn to make up 4 cups in all

2 x 310 g cans sweet corn kernels, drained, but retain 1 cup juice.

Melt the butter in a pan, add onion and saute gently for 5 minutes without browning. Add the potatoes and cook for a further 2 minutes.

Stir in the flour, then gradually add milk and corn juice combined, stirring constantly. Bring to the boil, add the bay leaf and salt and pepper to taste. Add *half* of the sweet corn. Cover and simmer 15-20 minutes. Discard bay leaf & cool slightly.

Sieve or work in an electirc blender until smooth. Return to the pan, add the remaining sweet corn and heat through. Stir in the cream, sprinkle over the bacon and serve immediately. Serves 4-6.



COUNTRY CORN BREAD

3 cups SR flour
1 tsp curry powder
125g cheddar cheese, diced
1 x 310 g Corn Kernels (drained), or 1 cup fresh cooked kernels
4 eggs
1/2 cup finely chopped shallots
1 x 45 g can flat anchovies, drained & finely chopped
1/2 cup milk

Sift flour and curry powder into bowl. Add cheese, corn, lightly beaten eggs, shallots, anchovies and milk and mix well.

Spoon the mixture evenly into two well greased (10 in x 3 in) loaf tins. Bake in a moderate oven 20-25 minutes. Cut into slices to serve.

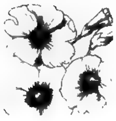
RARE FLOWERS UNUSUAL VEGETABLES

If you are bored with the "everyday" seeds offered in supermarkets, it's time you explored Digger's full colour Garden Annual. It's full of interesting hard-to-find items tested at our garden at Heronswood. Seeds sent direct from our warehouse in 4–10 days throughout the year. Not available from retail outlets.

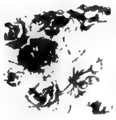
FLOWERS FOR A COTTAGE GARDENER

If you are bored growing shrill Petunias, vulgar Dahlias and garish Marigolds, it's time you explored the creative possibilities of a cottage garden. We have recreated cottage gardens at Heronswood, so you can see a flower garden of real character using these flowers.

PRAIRIE GENTIAN, Lisianthus
This flower thrives in our summer heat and we predict it will become as popular as Gypsophila!! Flower shape is like a Tulip with long stems and it lasts beautifully in a vase. 50 cm. Pink, blue and white.
Pkt of mixed pelleted seeds $1.50.



LAVATERA SILVER CUP
As easy to grow as Hollyhock with similar pink heavily-veined flowers that last through summer. The most asked-for flower in our summer border. **Pkt $1.00.**

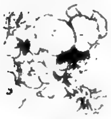


DOUBLE ROSETTE IMPATIENS
A new breakthrough with many double flowers like a miniature rose. Ideal pot plant or for the shade. 40 cm. Red, pink and white.
Pkt $1.50.

GERBERA HAPPIPOT
A stunning new breakthrough of fast-growing short-stemmed large flowers ideal for pots and for picking from the border. Flowers most of the year. White, pink, red and yellow. **Pkt 5 seeds $2.50.**

TRUE PYRETHRUM
The plant that produces the safest insecticide is easy to grow and worth a place in the front rank of any garden with fern-like grey foliage and white Daisy-like flowers. **Pkt $1.00.**

MOON FLOWER
Pure white dessert-plate-sized flowers open at dusk with delicious fragrance.
Pkt $1.00.



HANGING NASTURTIUM
Fragrant blooms on semi-trailing plants. Ideal for hanging baskets. Red or yellow. **Pkt $1.00.**

HANGING CARNATION
You don't have to visit the Tyrol to see this perennial cascade of blooms. Baskets, mixed. **Pkt $1.00.**

BLACK PANSY
Associates beautifully with blue, grey, orange, pink and white flowers. Easy to grow and long flowering.
Pkt $1.00.

WILDFLOWER MEADOW MIX
Create your own wildflower meadow. Mix includes red Flanders Poppy, blue Cornflower, orange Californian Poppy. **4 pkt equiv. $2.50, 20 pkts $10.00.**

NOVELTIES

Gardening should be lots of fun. Try our novelties imported from many countries that you won't find in the shops.

ARMENIAN CUCUMBER
Grows up to 3 ft long with ribs and still tastes good. **Pkt $1.00.**

GIANT RUSSIAN SUNFLOWER
Can grow up to 20 ft tall. **Pkt $1.00.**

MOUNTAIN PAW PAW
Will produce plum-sized fruit in cool climates. **Pkt $1.00.**

NEW GUINEA BEAN
An old favourite that grows up to 5 ft long but best eaten at 8 in.
Pkt $1.00.

HORNED MELON
The latest exotic fruit grows as easily as Cucumber and tastes like an exotic Passionfruit. **Pkt $1.50.**

SPAGHETTI SQUASH
A Squash that yields spaghetti-like strands after cooking. The perfect vegetable substitute with your favourite sauce. **Pkt $1.00.**

WORLD'S LARGEST TOMATO
The strain that holds the world record of 3 kg. Exclusive to Digger's customers. **Pkt $1.00.**

GIANT SEED STARTER

You can't fail with this propagator. Contains 8 seedling punnets and sterilized seed-raising mixture as well as 15 Jiffy pots for vegetables that don't transplant well. Contains clear lid to trap light and prevent moisture loss. Just supply good light and 20°C for perfect germination. Size 24"x 9" (60 x 24 cm).
Retail $20.00, Club $18.00.

SUCCESS WITH SEEDS

The best book we know on starting and raising flower and vegetable seeds as well as herbs and trees. Includes many rare and difficult items. 350 pages, hard cover in colour.
Retail $26.00, Club $24.00.

FLOWER EXPERT

The best book on perennials and annuals we've seen with 180 pictures of perennials, 60 pictures of bulbs, 92 pictures of annuals, 160 colour pages.
Retail $7.95, Club $7.50.

VEGETABLES

Our selection of vegetables with superior taste to anything you're likely to find in the shops. A unique selection for home gardeners that's good enough for our best restaurants.

BEEFSTEAK TOMATO
Large and meaty hamburger-size slices. **Pkt $1.00.**

SUGARLUMP TOMATO
Good cherry-size fruit that's extra sweet. **Pkt $1.00.**

BREAKTHROUGH SWEET CORN
It's not only sweeter but it stays sweeter than anything you've grown before for up to 10 days!
Double serve pkt $1.00.

BUSH POTATO SQUASH
As good for soups and side dishes as Butternut Pumpkin but it's a bush form and not watery like most pumpkins. **Pkt $1.00.**

HA-OGEN ROCKMELON
Delicious lime green flesh. Its early space-saving form will fruit even in cool climates. **Pkt $1.00.**

SUGAR SNAP PEA
Fleshy sweet pods are full so you don't have to shell and can be eaten raw or cooked. **Pkt $1.00.**

BUY 6 PKT RESTAURANT COLLECTION AND SAVE $1.00, 6 PACKETS FOR $5.00.

PEAK PRODUCTION SELECTIONS

Buy our 50 cent packets and save 50% on this selection of popular high-volume lines:

BEETROOT GLOBE	Pkt 50 c
CARROT WESTERN RED	Pkt 50 c
LETTUCE GREAT LAKES	Pkt 50 c
ONION EARLY BARLETTA	Pkt 50 c
PARSNIP HOLLOW CROWN	Pkt 50 c
RADISH ROUND RED	Pkt 50 c

Buy our double serve packets of Dwarf Beans and Sweet Corn to produce twice the harvest.

BEAN WINDSOR LONG POD	Pkt $1.00
DWARF SWEET CORN	Pkt $1.00

Buy our Five Star selections to give peak yields. Rated after extensive trials to be the best selections in each vegetable category.

BROCCOLI FIVE STAR	Pkt $1.00
CABBAGE FIVE STAR	Pkt $1.00
CELERY FIVE STAR STRINGLESS	Pkt $1.00
CUCUMBER FIVE STAR	Pkt $1.00
TOMATO FIVE STAR EARLY for fruit before Christmas	Pkt $1.00
TOMATO FIVE STAR LATE for fruit as late as July	Pkt $1.00

TREE LUCERNE STARTER KIT
All our country customers will want this amazing tree. It's fast-growing, excellent autumn fodder and a good windbreak. Starter Kit contains instructions, over 200 seeds, 130 paper pots, seedling tray and sterilized propagating soil to ensure you succeed. That's only 12 c/tree!
Retail $18.00, Club $16.00.

THE COTTAGE GARDEN REVIVED

Heronswood circa 1871 (National Trust) Circa 1864

VISIT A COTTAGE GARDEN THIS YEAR

Step back into the past and enjoy our Cottage Garden overflowing with beautiful flowers rarely grown today. We've established a large herbaceous border, two cottage garden displays and numerous areas of wildflowers. Set on the high ridge of Arthur's Seat with extensive views of Port Phillip Bay, Heronswood is one of Victoria's most romantic historic buildings and is classified by the National Trust. The 3½ acre garden has been reconstructed to show how easy it is to re-create a cottage garden for those with imagination and adventure.

Club members are invited to visit our 120-year-old garden Monday–Friday and the first Saturday each month 10 a.m.–4 p.m. (best time Sept.–Mar.). 70-min drive around Port Phillip Bay from Melbourne (Melway 159 C9).

Vita Sackville-West the creator of the famous Sissinghurst Garden in Kent was a great devotee of Cottage Gardens and in her garden articles expressed her passionate enthusiasm for this sadly neglected form gardening. "Why indeed should anyone have a commonplace garden in a commonplace rectangle? Endless variations are possible for those restricted in space but not in their imaginative ideas. For my own part, if I were suddenly required to leave my own garden and move to a bungalow on a housing estate or into a council house, I should have no hesitation at all about ruffling the front garden into a wildly unsymmetrical mess and making it as near as possible into a Cottage Garden which is probably the prettiest form of gardening ever achieved in this country in its small unambitious way. I should plant only the best things in it, and only the best forms of the best things, by which I mean everything should be choice and chosen. When you have only a very small area to your command you cannot be otherwise than selective."

Vita Sackville-West's enthusiasm for "the Cottage Garden style" is as relevant to Australia today as it was to English gardens 30 years ago.

We have re-created a period Cottage Garden at Heronswood so our Digger's Club members can see how appealing and creative a Cottage Garden can be.

JOIN THE DIGGERS CLUB

$12 FOR 1 YEAR
$18 FOR 2 YEARS (save $6)
$36 FOR 5 YEARS (get 2 yrs free!)

YOU WILL BE ENTITLED TO OUR:

GARDEN ANNUAL with over 140 COLOUR PICTURES

Our Garden Annual is more than a seed catalogue, it's a grower's guide to successful seed raising, featuring the very best garden books we know as well as propagation equipment to give you the best chance of success. Our seed list includes 11 exotic fruit, 22 trees (particularly fodder trees), 150 flowers, 24 herbs and 100 vegetables, particularly hard-to-find space-saving vegetables and 10 different Tomatoes.

5 FREE PACKETS OF SEEDS

2 after you join and 3 in our November Free Seed Distribution (that's worth $5.00 at your nearest garden shop!).

PLANT CATALOGUE WITH OVER 180 COLOUR PICTURES

If you have trouble with seeds we can supply you with over 120 perennials, 50 different bulbs and 40 different roses to create your garden. The Catalogue is full of hints about aspect, colour, height and dos and don'ts for success. We are specialist growers offering many rare items you just won't find at your favourite nursery.

CLUB MEMBERS ARE ALSO ENTITLED TO

SAVING OVER 50%

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PLEASE READ THIS CAREFULLY

Land lines are for people, buying, selling, seeking or sharing houses and land. We charge a flat rate of $12.00 (prepaid) for a listing of 50 words (maximum), plus full name and address (compulsory) and phone number (optional). Readers have the responsibility to check all deals. This is not a lonely hearts column. Copy deadlines: EG52 Oct 10.

Two shares available (one share per adult) in established community of 14 shareholders. Multiple Occupancy approved. Easy access. Shares offered include 2 acres fenced, small dwelling with electricity and telephone. Large shed, two dams. etc. Price $22, 000.

For more information, phone (065) 585592, A. Simonis & N. Burgess, Upper Bowman, via Gloucester, NSW 2422.

156 acres for sale in northern Tasmania, near beautiful Deloraine. The property is about 3/4 hour drive from Launceston, in hilly bushland. It is bounded by State Forest, a sheep property and a cattle fattening property. Has magnificent tall timber. Price $27,000.

Cecilia McCulloch, 62 Boland Street, Westcourt, Cairns, Qld. 4870. Phone (070) 517894.

land lines

1/15 th share in community, 140 km south west of Brisbane. New two bedroom cottage, fully furnished, power, phone, septic, good water. Large shed 40 ft x 30 ft. Primary and High School bus at door. Use of tractor and implements. Price $35,000.

Ken and Joy Bell, North Branch Road, M.S. 394, Warwick, Qld. 4370. Phone (076) 661129.

Land for sale, Tweed Valley, adjoining State Forest. An abundance of wildlife in this natural bushland/tropical rainforest setting. Build your own cabin and enjoy the good life. Price from only $15,950.

Phone Arthur Jones (066) 721160 (Real Estate Agent), or write to 29 Wharf Street, Murwillumbah, NSW 2484.

106 acres, 38 km to Bundaberg, cleared flat country and timbered hills, partly frost free, fenced, adjoining State Forest, secluded, abundant wildlife, two dams, waterholes. Suit community, peaceful living, grazing. Three bedroom chamferboard home, newly painted, concrete stumps, septic, kero fridge, solar lights/ hot water, generator, power one mile away. 5,600 gal. rainwater, 40 fruit trees, some bearing, 50 bananas. Shed, tractor, implements. Price $62,000 ONO.

Manfred & Sigi Steck, C/- P.O. Bundaberg, Qld. 4670.

Vegetarian co-operative shareholders sought: 629 acres, north facing valley, permanent clean water, rainforest. Building (pise´, mudbrick, sod roofs) and planting (food forests, animal forage, reafforesting) in progress. Seven current shareholders, three small children. Women, children, musicians encouraged. Shares $10,000.

Contact: Magic Mountain Permaculture Co-operative, P.O. Box 400, Wauchope, NSW 2446.

283 acres freehold, South Coast area, NSW. River frontage with trout, waterfall, superb, idyllic valley, 15 acres cleared, rest timbered. Good stands of commercial timber. Partly fenced, phone, power. Schools close.Two huge sheds, two caravans, building materials, pumps, equipment. Cropping trees planted. Stock and seeds. Exceptional bargain $66,000 ONO.

Phone P. & D. Ens (02) 4562575.

$20,000 buys a house on large town block, water, power, phone. Close school, shop, library, post office and pub. Fifty fruit trees, 10 grape vines, established gardens, herb gardens, large shed, poultry run. Rates $140 year. Fish and yabbies in the river.

Contact Keith Ross, 4 William Street, Hebel, Qld. 4486. Phone Hebel 24.

One share in the Wala Gala Association for sale. Independent share (resaleable) within an established, long-standing alternative community in the Tuntable Valley, near Nimbin. Local shop and school is easy walking from land. Beautiful rainforest and breathtaking views, with stunning waterfall (Tuntable Falls) at one end of the valley. Asking price, $12,500.

Please contact Fabian Douglas, C/- P.0. Kangaroo Ground, Victoria 3097. Phone (03) 7120352.

Lillifield Community. A total of 40 shares at $12,800 each in a Council approved Multiple Occupancy (over one third already sold), 15 km west of Nimbin on the Kyogle-Murwillumbah Road. Each share gives legal entitlement to 4-5 acres as well as a share in over 100 acres of common land. There is a choice of flat land, high land and valleys, gentle slopes, with creeks and streams. The Community House main structure has been completed. There are gravel roads, dams for water supply and swimming, a tractor and various implements for community use and the local Rudolf Steiner School is located on adjoining land.

Write to 'Lillifield', Lillian Rock 2480, or phone (066) 897224, or in Sydney phone Sabina (02) 921303.

Two faced stonework

MUDLARK BUILDERS

Dael Allison and Rick Haughton of Mudlark Builders are specialists in design, consultation and supervision of mudbrick buildings. In less than 10 years they have had 50 designs for homes passed on the Central Coast, mainly for owner builders, and helped to build some of them as well.

Rick is a licenced builder and Dael is an artist, who designed the colourful glass applique windows at Jan and Michael Bailes' mudbrick gallery at the Fragrant Garden, Erina, NSW.

In 1977, they built their own striking mudbrick home after moving to the Gosford area from a farm in Victoria (see ***Building Skills****, Earth Garden 29). It was the first of the 'new wave' of earth buildings close to Sydney. Dozens of people came to visit the house and many asked them to design their homes or help them to build in mudbricks.*

After their own building experiences, Dael and Rick prefer to work mainly with owner builders. "We know what they have to face," says Dael, "the good and the bad."

"We generally collaborate on design, though Rick does the draughting and the nutting out of details to make a building work. He has an excellent sense of design."

There are mudbrick houses designed by Mudlark from Erica in Victoria to Mullumbimby on the NSW north coast.

Dael and Rick now live on 150 acres near Taree. They decided to built their first temporary dwelling from the abundant building stone on their property. They have a new partner now also, Ned, aged 21 months. Says Dael: "When we're both working on a building, Ned comes on site too and potters around with the tools, passing us a hammer when we need it. It's great, though we haven't actually got him making mudbricks yet!"

° **Mudlark Builders**, Warrawillah Road, Mooral Creek 2429, or Gallery 460, 460 Avoca Drive, Gosford 2250.

By Dael Allison

Proximity to materials was the major factor governing our choice of stone for the walls of our small cottage.

The building site is set in the midst of a lazily sloping paddock littered with loose stones ranging in size from small chips to hefty boulders a couple of metres in circumference.To the rear of the site is a windrow of even more rock, containing enough material to build several houses. Stretching 500 metres long, this row had presumably been pushed into place by a bulldozer during the last major clean-up of the land some 15 years earlier. Though covered now in a vigorous regrowth of melaleuca, privet and persimmon, there are ample large rocks still easily accessible, needing only to be pushed or levered free to tumble down the slope to the tractor and carry-all.

The cottage itself is a 'temporary' dwelling; temporary in terms of our plans to live in it, not in its life expectancy. When we bought our land there were no existing buildings. Our plan was to erect a simple 9m x 6 m bush pole framed shed with a corrugated iron skillion roof, then to build the cottage, which is an extension of the shed and thus utilises part of the shed framework. This provides us with storage and comfortable accommodation while building stages 3 and 4, the main house, which will inevitably take some years to complete for reasons of finance. That's once we get started! Ultimately, the cottage will revert to workshop/studio space and extra accommodation for visiting friends.

Selection. We've never satisfactorily determined the genealogy of our stone. It is extremely hard and virtually impossible to split or shape. It is not a smooth, waterworn stone, but there are few sharp edges, faces or corners. Many of the larger rocks have a curious characteristic of an extremely dense, hard core, round and smooth like an ancient river stone, encased in a more sedimentary material, itself very hard, suggestive of a pudding wrapped thickly in cloth. When we found rocks already cracked the outer layer would sometimes exfoliate or peel away from the core. The hardness of the stone combined with this exfoliating tendency meant that the stone could not be worked and therefore selection was all important.

Selection of stone for laying was determined by size, portability and possession of a useable face. Stones with one good flattish side or two faces with a corner edge were collected in separate piles. Despite this many hours were still wasted toting stones which looked perfect for somewhere but which simply wouldn't fit and had to be discarded. This was the most frustrating but inevitable aspect of the whole stone building experience. Although the amount of time wasted decreased as the eye became more practiced, we never attained that enviable precision of the legendary stonemason friends and observers were ever willing to tell us about, who *always* found a place for a stone once he had picked one up.

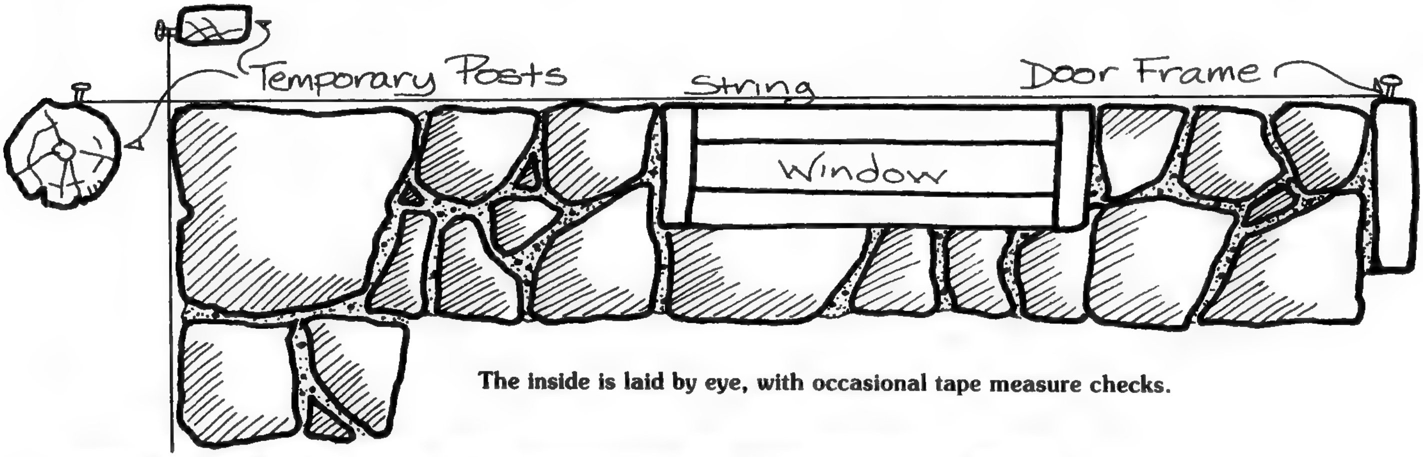
Walls. The walls we built were 350 mm thick on average and were laid both by eye (on one side) and to a stringline. This was our technique:

Trenches 450 mm wide were dug to a depth of 200 mm-300 mm. We used small rubble and rubbishy, unattractive stone to build a composite stone and cement footing. Our mortar was river gravel sieved through a wire bed base which gave us fines of 5 mm or less. This was mixed 5 or 6:1 with cement. A layer of mortar was thrown into the footings and the rubble trodden into it. Then larger stone was placed on top, more mortar thrown over and rubble embedded into the spaces between stones. The footings were built to damp-proof course (DPC) height and roughly levelled off.

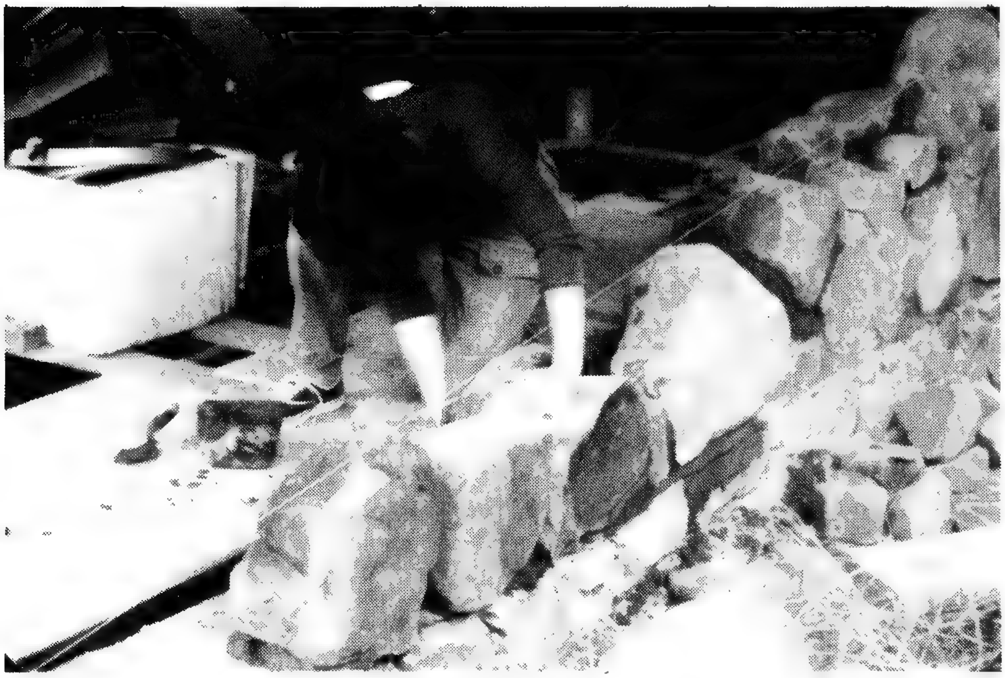
A 350 mm course of *Alcor* was laid on the footings below finished floor level. Engaged stone piers had been constructed in conjunction with the footings to take the bearers for the wooden floor. At damp-proof course level the floor structure was built and floorboards laid upside down on the floor joists. This gave us an area to walk on while keeping the boards clean during the work and also allowed the floorboards time to dry and shrink before they were turned over and nailed down at the end of the job. Door frames were also erected and braced at DPC stage.

Using a string line attached to door and window frames and to temporary posts set and braced beyond corners, we laid a 350 mm wide wall, faced with stone on both sides, with a cement/rock infill. Generally the stones used bridged one half to one third of the wall width. Every 500 mm or so we bridged the full width with a 350 mm stone as a key to tie in and stabilise the wall. Finding such impossible stones extended the selection process by some hours in several cases as we searched the windrow for the perfect rock. Corner stones were equally difficult to find. One of my most vivid memories on the job is the highly creative language which accompanied these searches, or other activities like lifting large ungainly rocks to high places only to find them a few millimetres too long or too wide for the job. It was flamboyant stuff!

Typically we would dry stack a run of 600 mm long with stone working to one side or another of the wall. This ensured all stones were balanced and snug, supported on at least three points; otherwise they would fall out before they could be set in. We also had to observe the basic rule of any coursed wallwork (be it brick, mudbrick or stone), that is to avoid any continuous vertical joints which will



The inside is laid by eye, with occasional tape measure checks.



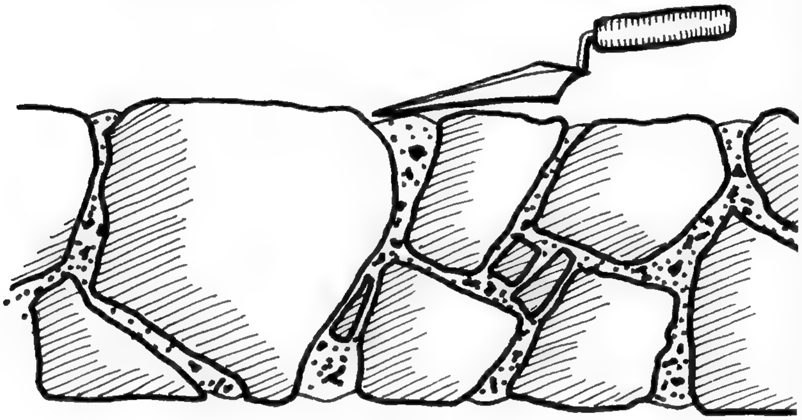
Dael laying stone to the string line.

allow stress cracking to occur in the unlikely event of footing subsidence. It is important both structurally and visually to balance out size and shape, using larger stones to bridge over areas of small infills.

When we were happy with the placement we would pack mortar around and behind each stone, lifting where necesssary to bed them in. Then we would move on to the back face of the freshly laid run or on to an adjacent area to allow the mortar time to firm up. Punched hoop iron was nailed to door and window frames every 600 mm or so and nailed into the set mortar. Barbed wire laid in the wall to guard against possible cracking alternated at the same distance, effectively tying in all timbers every 300 mm.

In the early stages of the job, laying as many stones as possible each day was the main prioriy. Cement was roughly cleaned from the work and joints between stones were haphazardly raked up with the idea that once the walls were up we'd go back and 'point up' and clean up generally.

When it became apparent that this would mean much more work in the long run, we developed a system of pointing up as we went. We allowed the mortar to 'go off' or cure to a fairly firm consistency and then smoothed between the stones with the trowel point. This was a quick process and the effect was neat. If mortar thickness is regular, pointing can be done with a piece of timber or hoop iron, but as the gaps between our stones were very narrow in parts it was just as simple to use the trowel.



Pointing

The heavy lifting involved in stonework created a graded effect as the walls grew higher. The heaviest, most ponderous rocks are inevitably in the lower sections. This is fine in terms of wall stability and it looks good too.

After working with mudbricks for 10 years stone laying was a new experience. Rick quickly decided he didn't have the patience necessary for the rather fiddly nature of the work and he stuck to carpentry, plumbing etc. and carting all the stone we needed. It was great to have help from friends, especially two terrific workers who stayed several weeks with us. Les, an old hand at dry stone walling but new to mortar work, started us off and Andy, an English friend we'd met travelling, helped us to finish. Andy and I were complete novices, but we felt like old hands at the end of the job.

I was six months pregnant when the walls were finished. However, I found the work enjoyable and quite manageable – pregnancy is a great catalyst in the building process!

We have now been in residence for over 18 months. Friends love the stonework and we've had a lot of comments on the straightness of the walls, especially the corners. Of course, given the random nature of our stone, the walls are as bumpy as hell but the eye readily absorbs irregularities. There is a good amount of colour in the stone but the overall effect is brown-grey. This means very little light is reflected from the wall surface, so despite ample glass areas the interior of the cottage is a bit dim. It's fine in summer, but the effect is cold and dark during the rest of the year.

It's hard to estimate the time factor involved in our method of stone laying. Working an average eight hour day, two of us laid a section of wall 5.5 m x 2.5 m in about three weeks. It wasn't a speedy job. Offsetting stone collecting against mudbrick making and considering stone laying is much slower we don't think there is much time difference between the two methods. I do think mudbrick laying takes less physical effort.

Building the cottage was a great experience and fulfilled a romantic dream I'd had for years. We are proceeding with plans to build the main house in mudbrick because it's a material we both love, but I'm pretty sure some stonework will creep in before the house is finished.

PRIMROSE P. S.

By John J. Alderson

Having introduced two species of *Oenothera* into my garden last autumn, I find that *O. biennis* at least has behaved differently to what my article on the Evening Primrose in Earth Garden 49 suggested it would.

In spring it suddenly ran up into a much branched shrub-like plant, the branches breaking under their own weight (not too much water, rainfall was drought like) and flowered profusely. In this it has acted as an annual.

The *O. stricta* was transplanted from beside the railway (the best place to look for them) and it too behaved like an annual and sent up a single flowering stem, and with watering, proceeded to send up a series of new stems. Whilst both species have similar flowers, I believe *stricta* has the larger flowers and is certainly the most sweet smelling. So while *biennis* has grown about 1 metre high and nearly 2 m in diameter, with a mass of golden flowers, the *stricta* is a single stem half a metre high with the strongest smelling flowers. Both are worth growing.

RIVER STONE & MUDBRICK

By Stephanie Houston & Tim Stott

It takes many years for a river to wear down its rocky bed into smooth rounded river stones.

But despite their edgeless shape, most river stones end up as part of a Bicentennial road project as they are easily crushed into blue metal.

Brian and Sharon Rogers appreciate river stone more than your average quarry so they are making it a feature of the post and beam mudbrick house they are building at Wombat, an old gold mining town near Young, New South Wales.

The Welsh born couple say this is the first 'real' house they have built. Their first effort was a post and beam house of corrugated iron and mudbricks lined inside with hessian and a floor of ironbark wood rounds inspired by an article in Earth Garden.

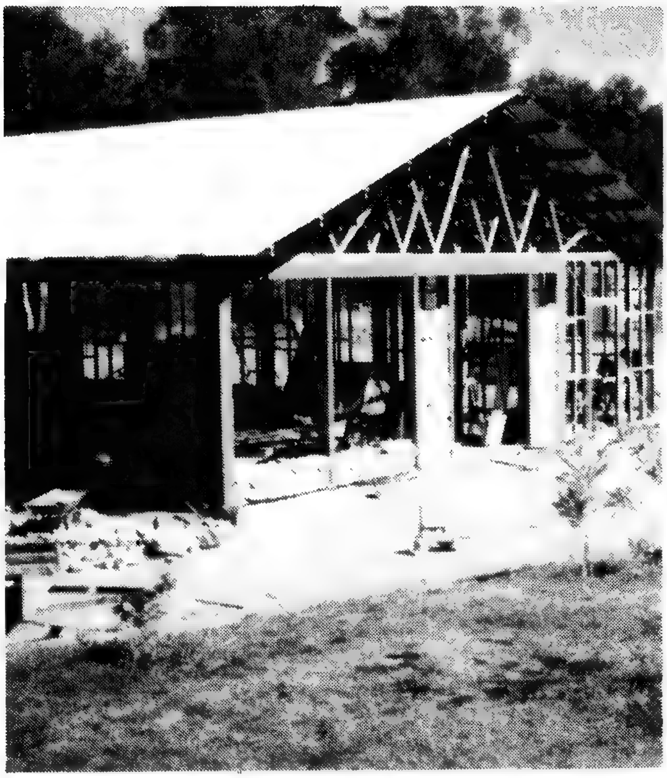
At present Brian (who works as a handyman), Sharon and their children Bryn and Hew, live in a tin shed on their block and make mudbricks and build mainly at weekends. It's taken 12 months so far, but they hope to be living in their home by Christmas, 1986.

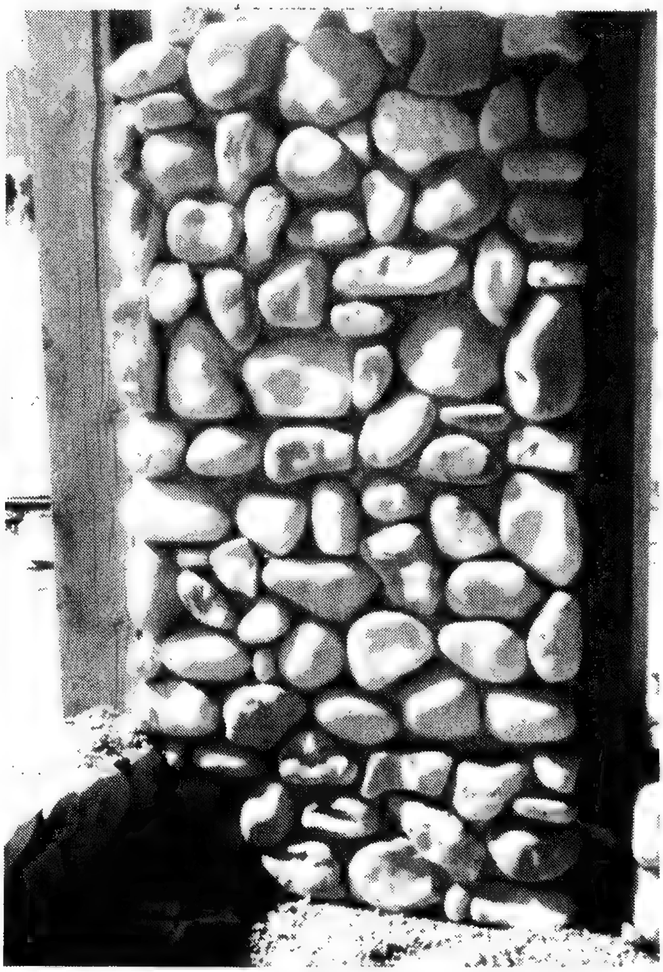
The beautiful rounded river stones in shades of brown, grey and blue come from a nearby river and are being set in cement as infill panels between timber uprights on both inside and outside walls. Brian and Sharon are very particular about the stones they choose for their feature walls. Each stone must pass their inspection for correct shape, flaws, durability and appearance before it is cemented into the wall. The stones are then cleaned with acid and painted with a silicon sealer to preserve them and give them a deep lustre.

The soil used for making mudbricks was excavated from sloping land where the house now stands. Straw was added as a binder after the first few mudbricks cracked.

A lot of the timber being used has been recycled. Stained glass cedar framed windows in the front room, bought at an auction in the nearby town of Binnalong, are dated 1875 while Brian bartered some work for the others. Strongly made doors of 50 mm thick oregon timber came from a mental hospital. They had doorknobs on only one side!

In the first stage the house will have two bedrooms with a 3 metre wide verandah at the front. Ceilings in the living room will be pine and those in the bedrooms will be lined with Gyprock. Brian is already planning an extension as his family grows.





Top: Framework of Brian & Sharon Rogers' stone and mudbrick house at Wombat, NSW. Below: Detail of river stone infill panels.

A new beginning

HERMITAGE, Cedar Pocket, Qld.

By Gillian Reilly

Tucked away in the lush green of a rainforest, Hermitage sprawls gently up hills that once grew pineapples. Ten years ago Alan and Philippa Sargeantson found Hermitage, at that time an abandoned 100 acre pineapple farm with a tumbledown old house that had stood vacant for 15 years.

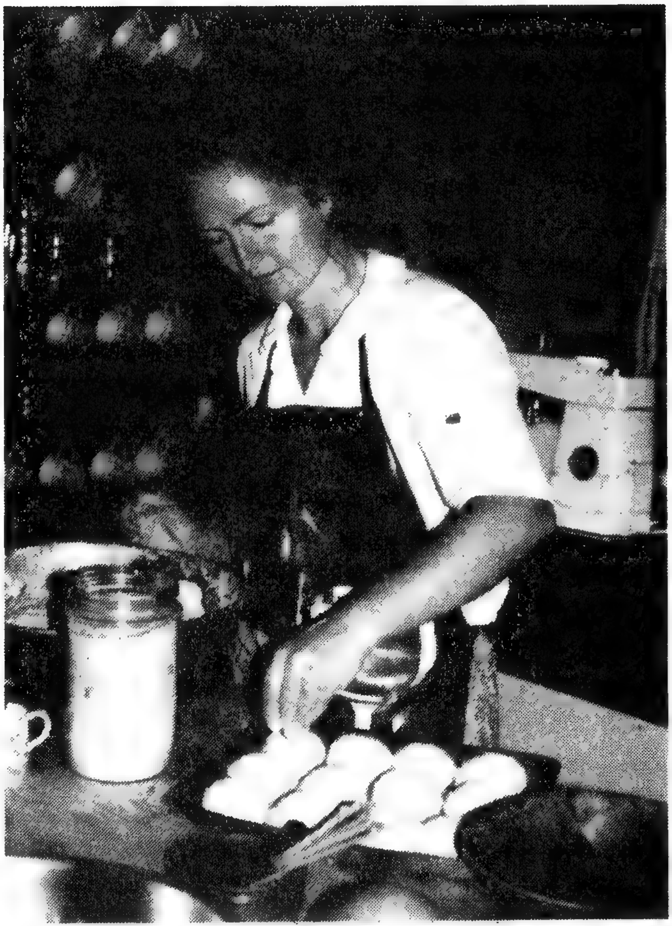
There is a definite ambience about Hermitage, a feeling of great love and caring. Hard work is evident everywhere and there is orderliness without fuss and ado.

In 1974 the Sargeantsons had a vision to build a better life for themselves and to see their concept spread out into the wider community. They wanted their children to grow up as individuals, rather than be churned out of the school system to become statistics. They wanted to grow their own food and to be as responsible as was practical for their own health and well-being. They wanted to live in a community, sharing and caring for one another, being sensitive to each other's and their own needs and desires. Not just barely making it through each week, but communicating fully with each other, growing in strength as a unifed group and respecting each other.

Hermitage is based on the Findhorn Foundation, a community formed in Scotland over 20 years ago. Philippa was able to go to Scotland to learn at first hand how to start and run a community like Findhorn and to acquire all the communication skills needed to run one successfully. She found there were many others with visions like her own.

When we heard about Hermitage we immediately wanted to go and see for ourselves what this family had achieved. We were from all walks of life, accountants, computer people, teachers, office workers, an architect, writers and a young man completely untainted by life. So early one Friday morning the first of our small cavalcade set out towards Cedar Pocket, just 16 km from Gympie and two and a half hour's drive from Brisbane. Only the last two miles are over gravel roads, but we hardly noticed as we were busy counting. Did the creek really cross the road no less than 13 times?

We left our camper inside the gate on the grass beside the creek and strolled up the winding pathway to the main house. I was puffing and panting by the time we got there, with every muscle in my out of condition body screaming.

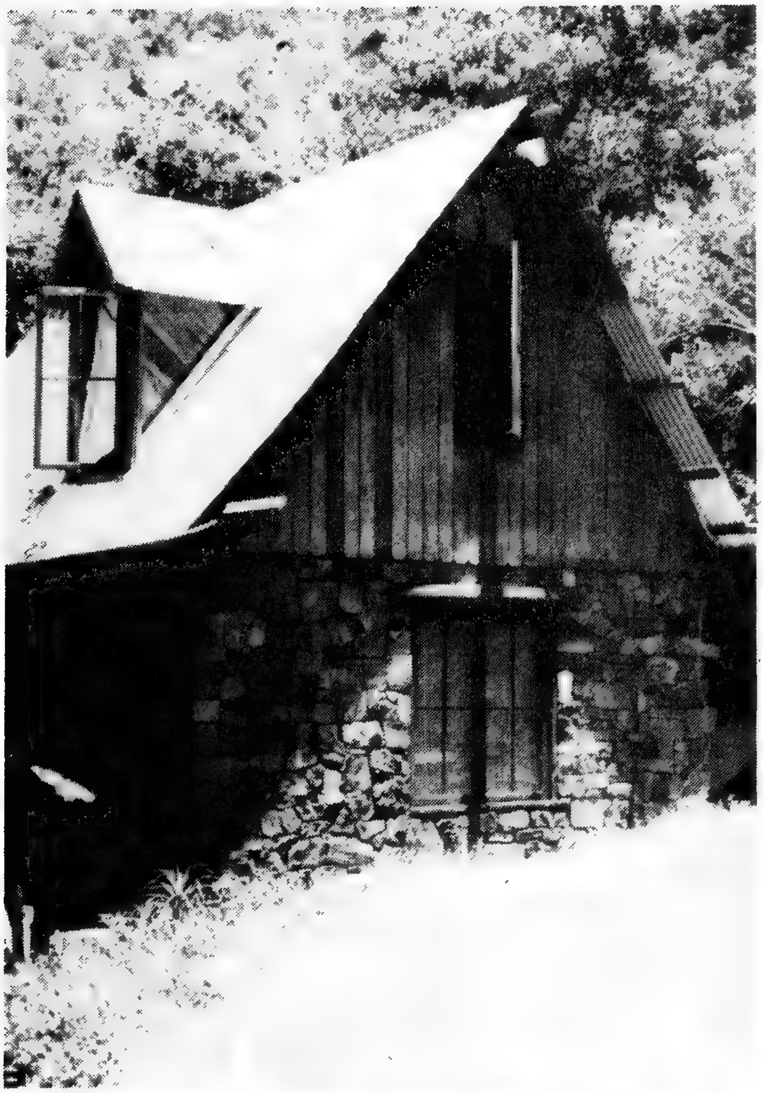


June, the bread maker.

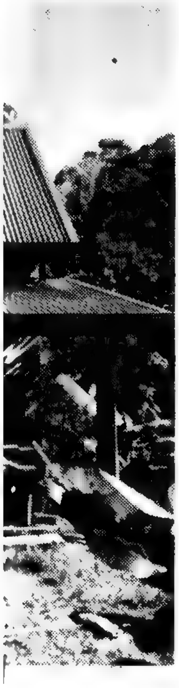
There are eight adults and four children living at Hermitage, ranging in age from about one year to over 80. Everyone has an area that they are responsible for, be it bread making, cooking, beekeeping, gardening, caring for livestock, forestry, orchard, mechanics, child care or building. Granny crochets blankets and rugs. As much food as possible is produced at Hermitage and they keep a house cow, fowls and bees. The vegetable gardens and fruit orchards are flourishing and keep Gayleen, the cook, continually busy.

Meals are a family affair and we were privileged to be guests at dinner and lunch over the weekend. Gayleen's dishes were a feast for the eye as well as the stomach. She has a natural flair for both taste and presentation. We ate delicious and colourful salads of vegetables, all grown in the gardens, hot casseroles with homemade cottage cheese, bread and butter and luscious fruit salads. Afternoon tea always meant feasting on sticky chunks of flapjacks covered in honey and sesame seeds.

The right balance appears to have been reached between the practical and the spiritual, a wholeness. They are not bogged down in idealism; there are no fads or fancies. With food, they eat what is available and whatever they have produced, be it beef, chicken, vegetables, fruit or honey.



Scenes at Hermitage. Top left: The Lilly Pill Philippa in the main house with its riverstone wal Apricot House, seen in the photo below. Adzed right) show the high standard of interior finish Below right: A section of the vegetable garden.



y House, used as a kindergarten. Below left: ls. Centre top: Building the foundations of the beams (top) and shuttered windows (centre ng. Top right: The amazing tree trunk loo.

They grow whatever the land will produce and produce well. For their building materials, they also used the rocks and timber on their land.

I felt that while so many of us are groping about in the dark, dreaming of 'ten acres and independence', the people at Hermitage are quietly going about their business in an orderly way, in their effort towards self sufficiency. A major part of the Sargeantson's vision is for fellowship, world wide, with other similar communities.

Three houses have been built at Hermitage, using the creek stones and timber from their own forests, cut and adzed with care and expertise. Peter, the builder, learnt many of his skills in Wales. He is the oldest son and went to Findhorn with Philippa. He is married to Gayleen and they have two little girls.

The original farmhouse has been revamped. All old, decayed stumps were removed and new walls built of rock from the creek bed. Enormous adzed beams and large glassless, shuttered windows have made a beautiful large airy room for family gatherings and meals under the house. The only kitchen is at the back of the main house, complete with enormous fridges, two dishwashers and a small wood burning stove where bread is baked daily by Jane, the eldest daughter.

The kindergarten, a short walk from the house along a grassy trail, is a delightful gnome's home made from river stones and timber. A two storey fairytale house set in a lovely garden, it is called the Lilly Pilly House. This is the childrens' domain and Jane and Gayleen take turns caring for the children, which allows the mothers to have half a day each in which to work, do crafts or help on projects knowing that their offspring are constanlty supervised. I believe the fathers, Keith and Peter, take their turns too.

The Apricot House is the most recent construction, also two stories, with exposed beams, dormer windows and rock walls washed in pale apricot.

The loos are a delight and an adventure, especially the one inside a hollowed-out tree stump. Sawdust is used in place of chemicals and the resulting residue, quite clean and hygienic, is used to fertilise the fruit trees.

Andrew, the youngest son, is a mechanical wizard and is given every opportunity to prove his worth. He has never been to school, but is articulate and at 15 is quite at ease conversing with adults from outside the community. He learned to read properly at the age of 12, finding it necessary to order the correct parts he needed from a mechanics catalogue.

Others came to visit the Hermitage while we were there, several from other communities. We sat and talked and listened to everyone's ideas and ideals. Many of us had travelled extensively while some had never ventured out of Australia, but all had one common desire — to improve the world, in whatever way possible. By producing more food, living and sharing together, communicating and trying to understand one another better, teaching what we know and have learned, developing an awareness of the spiritual side of ourselves and fostering the common desire for the good of all mankind.

Guests are welcome at Hermitage. Details may be obtained by writing to: Hermitage, Bacon Road, Cedar Pocket, via Gympie, Queensland 4570.

HYDRAULIC ADOBE MACHINE

The Hydraulic Adobe Machine can turn out 500 strong and durable compressed earth building blocks in a day in a variety of sizes. The subsoil used does not need to be sieved or mixed because it is compressed in the ramming chamber by hydraulic pressure equal to 15 tonnes.

It's an Australian invention (recently seen on television on *Beyond 2000*) and machines are now being built at Parkes, NSW. The machine, which can be mounted on a small trailer, is powered by a tractor PTO or by an electric or diesel motor. The size of the compressed earth blocks is adjusted by a simple gauge at the side of the machine.

Polycom Australia is seeking people around Australia who would like to invest in the machine to produce and sell compressed earth bricks locally, or to rent out the machine as a business. Each machine is supplied with a set of instructions and a VHS video tape which shows assembly and operation.

As with ordinary mudbricks, the amount of clay in the soil used (which acts as a bonding agent) is a key factor. Ideally, the clay content should be between 30% to 60%, as it usually is in most places 2-3 ft under the topsoil. No water needs to be added if the soil is slightly moist. If the soil is sandy, cement is added as a stabiliser in the ratio of 6 parts of soil to 1 part of cement or 12:1.

When cement is added there is virtually no shrinkage and the blocks may be used for building the same day. Where the clay content is high, however, it's best to allow the blocks to dry and shrink 3-4 days.

° Further information from **Polycom Australia Pty. Ltd.**

P.O. Box 187, Castle Hill, NSW 2154. Phone (02) 6512518.

EARTH GARDEN INDEX

Issues 41–50

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ENERGY UPDATES AND ACCESS

Thin film solar panels

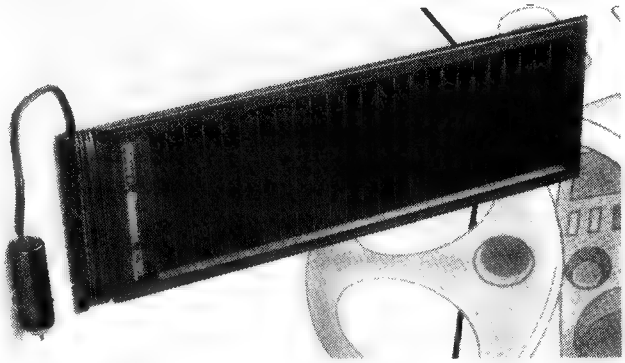
The first thin film silicon (TFS) photovoltaic modules — a breakthrough in solar electric technology — are now on the market in Australia.

Arco Solar has launched the new G4000 'third generation' solar panel which generates electricity direcly from sunlight falling on micro-thin layers of amorphous silicon coated directly on a glass layer. This *Genesis* TFS technique makes the entire solar electric panel and its circuits monolithic, in effect each is virtually one solar cell the size of the panel.

Rated output of the panel is 30 watts (W). It is marketed by **Elante Pty. Ltd.**, of Surrey Hills, Victoria and other Arco distributors.

Amorphous silicon is pure silicon with no crystal properties. Even a wafer thin film of amorphous silicon will readily absorb low intensity or diffuse light. Up till now they have been mainly used to charge batteries of solar pocket calculators and transistor radios, which will operate from sunlight coming through a window or even under a household electric light.

A year ago, Elante put on sale an earlier *Genesis* panel with an output of only 1.5 W called *Charge Saver*. A small rectangular panel is mounted on a car dash (inside the window) and has a lead plugged into the cigarette lighter to boost the battery and prevent dead batteries especially in cold weather or when the car is sitting idle.



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ELANTE PTY. LTD.
382 Canterbury Road, Surrey Hills, Victoria.
Telephone (03) 836 9966. Telex. 31845 Fax.

Thin film silicon panels are able to charge batteries in cloudy areas or other places where direct sunlight may not always be possible. With increased demand for solar electric systems and mass production methods, they hold out the promise of much lower prices for high efficiency solar electricity in the future.

Previous solar panels have been made up of typically 30-36 individual round or square solar cells wired together in series. First generation solar cells are made from slices of extruded single crystals of silicon and second generation solar cells from polycrystalline silicon (with many small crystals).

The G4000 has a wired in bypass diode to reduce potential power loss from partial shading of the solar panel, with separate covered positive and negative boxes mounted at each end. The electrically active glass layer is bonded to tempered glass and framed with anodised aluminium.

Technical: Power (minimum), 30 W; voltage (typical at load) 16 V, open circuit voltage 22 V, current (typical at load) 1.9 amps. Size 121.9 cm x 42.6 cm, weight 7.7 kg.

Elante handles the distribution of **Arco Solar** modules in Victoria, South Australia and Tasmania and in NSW from Newcastle southwards. These include the *High Efficiency* series of glass fronted Arco Solar panels of single crystal silicon solar cells rated at 53 W, 47 W, 42 W and 22 W respectively.

° Further information from **Elante Pty. Ltd.**,
382 Canterbury Road, Surrey Hills (Melbourne) 3127.
Phone (03) 836 9966.

Arco plant for Australia

Elante Pty Ltd. is one of three distributers of Arco Solar products which has amalgamated to form a wholly Australian company to make Arco Solar panels.

The new company, **Solar Cells Australia Pty. Ltd.**, has signed an agreement with **Showa Arco Far East** to begin manufacturing the modules under licence in September. The factory will be in Perth. The other two firms are G.F. Trading of Brisbane and Solar Cells of Perth.

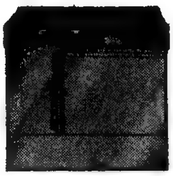
TOTAL energy takeover

Speareheaded by an advertising campaign with the slogan *God pays the power bills!* — which managed to offend both athiests and Christians — the French based multinational group **Total** has joined the scramble to get into the solar and renewable energy industry in Australia.

Total's first step was to acquire **Beasley Industries** of Devon Park (Adelaide), one of the first Australian companies to make and market solar water heaters (based on research begun in 1952 by Roger N. Morse at the CSIRO). Beasley's latest solar water heaters, with smaller modular solar absorber panels and ground level storage of water replacing roof mounted tanks, will be sold under the Total label from 1987.

The second step was to open a showroom of energy equipment, the **Total Energy Source,** at Castle Hill (Sydney). Here buyers can see under one roof Total and Philips photovoltaic panels and lighting kits, solar electric lamps (not a steal at $3,000!), solar electric pumps and fences and solar water heaters. They also stock the efficient, French made *Art Noveau* styled **Petit Godin** wood heaters and cooking stoves, including the *Arpege*, cheaper than most solid fuel stoves available here.

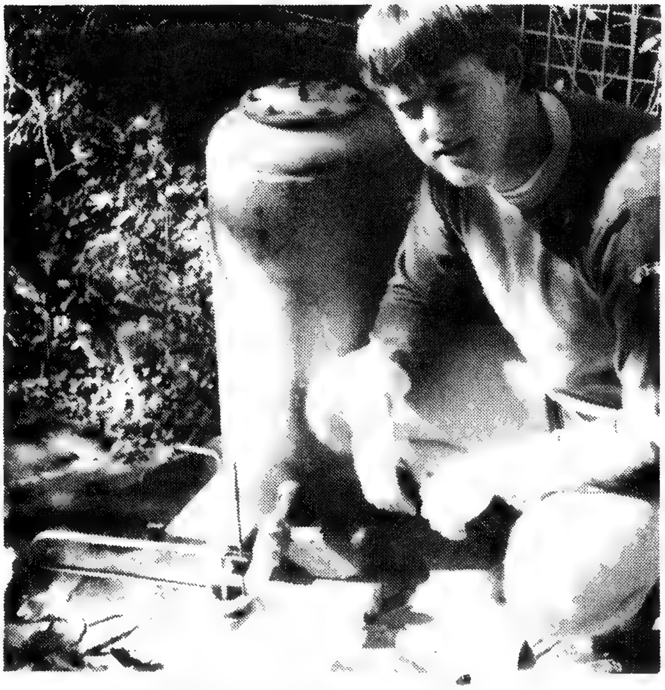
° Further information from **Total Energy Source,**
Unit 1, 4 Victoria Avenue, Castle Hill 2154. Open Monday to Saturday.



COUNTRY OUTLETS

Total's third step was to set up up a network of energy equipment dealers throughout NSW to reach customers in country areas. These are some of the outlets:

Blue Ridge Solar, 8 Nullum Street, Murwillumbah 2484.
Coona Cooling, 34 Cowper Street, Coonabarabran 2857.
Hastings Gas and Solar Centre, 87 Hastings River Drive, Port Macquarie 2444.
Maitland Solar Centre, 153 Swan Street, Morpeth 2321.
Moore and Smith, 68 Wollongong Street, Fyshwick, ACT 2609.
Newcastle Solar and Fireplace Supplies, Shop 4, 50 Metcalfe Street, Warners Bay 2282.
North Coast Energy Specialists, 184 Orlando Street, Coffs Harbour 2450.
North West Heating and Cooling, 13 Hill Street, Tamworth 2340.
Nowra Solar Centre, Lot A, 3 Princes Highway, Nowra 2540.
Port Stephens Solar, 47 Donald Street, Nelsons Bay 2315.
Richmond Solar, 6 Casino Drive, Casino 2470.
Solarspot, 75 Victoria Road, Dubbo 2830.
South Coast Energy Centre, Unit D, 27 Church Street, Moruya 2537.
Thermalair Pty. Ltd., 101 Summer Street, Orange 2800.
Young Heating and Cooling Services, 71 Boorawa Street, Young 2594.



RAM AND SUN PUMPS

By David Shepherd

After reading various articles in **Earth Garden** on hydraulic ram pumps, I decided it was time to try to build one for myself, as we have a stream running past our house which would provide the water power required to drive the pump.

My first experiments involved various plumbing connections, rubber diaphragms and coil springs (later discarded in favour of the more reliable horseshoe arangement) and a test rig consisting of a garbage bin, a 6 metre length of 100 mm diameter pressure pipe, a tee-section in 2 inch galvanised pipe and a one way valve. All up, the price of the various components was under $50.

After testing the pump in the University of Wollongong's Hydraulics Laboratory, I took it home in order to redesign the clack valve. In the position I had it at home and using the horseshoe shaped steel spring (heat tempered using an oxy-torch), I was able to get a 4.2 m lift from only 0.3 m of drive head.

After watching the pulses of water being delivered to a pot plant suspended from the second floor of the house I soon saw the relevance of adding a pressure chamber in order to regulate the flow and reduce frictional losses in the delivery pipe. An old swimming pool filter pressure vessel did very nicely thank you (see photo).

After the success of the ram pump, I decided to try and design a sun-pump on the principle of a large thermal gradient existing between day and night. My next door neighbour was throwing away a couple of old truck compressed air tanks and when hooked up to two one way valves in the correct sequence and placed in the sun, a constant drip emerged from the apparatus and was subsequently directed onto a vegie patch.

Access. Recent articles on hydraulic rams in Earth Garden were **Make your own hydraulic ram** (EG31) and **Water lifting water** (EG45 and *Energy Works!*). See also **The sun-pump** (EG47).

KERO REFRIGERATION

By Greg Baker

One of the necessities of life these days seems to be refrigeration of some sort. While in theory a creek, an Esky or a Coolgardie Safe (EG22-3, page 113) will work adequately, I'd hazard a guess that very few of us who have headed to the country from the city actually have and use any of them on a full time basis.

In places without mains power the modern approach seems to be to go for an LP gas refrigerator or one of those three way refrigerators designed for caravans run on the gas setting. When we started to set up our place in 1974 we either hadn't heard of gas fridges or they weren't in such widespread use. In any case, we decided to go to kerosene refrigeration.

As far as we were aware they were not available new, so we advertised in the local papers serving the area around our place in the bush. We got quite a few replies: it was amazing how many farms seemed to have one out in the shed. We rang around, decided on one, and headed out with the utility and a couple of ropes. Kerosene refrigerators are amazingly heavy as anyone who has ever tried to move one will testify. But somehow we got it onto the utility and out to the block. That was quite a feat, because of the weight and the fact that the centre of gravity is high.

That kerosene refrigerator was an excellent and apparently indestructible asset around the place.

Kerosene refrigerators are powered by kerosene stored in a tank underneath. The tank size and the burning rate will determine how long a tank lasts. Depending on the weather, that first refrigerator ran for between seven and 10 days. The weather, in particular the temperature outside the refrigerator, determines how high you have to run the flame to get the desired temperature inside. In hot weather the flame needs to be turned up to increase the refrigerating effect; in cool weather the flame needs to be turned down to reduce the refrigerating effect.

Experience seems to be the only way to tell where to set the flame. In those early days we fluctuated between frozen tomatoes and lettuce and green meat and milk with lumps while I iterated towards reasonable settings. We learnt early on that a kero fridge cannot cool inside the cabinet more than about 30° C below ambient temperature outside the cabinet. If we had a 40° C day — and we had more of them then we were happy about in those years — the inside could not be made cooler than about 10° C. This was too warm but there was nothing we could do about it.

Turning the flame up didn't increase the cooling effect, only made it smoke until the place was like an airport , and eventually clogged up the flue with soot. Once clogged with soot the refrigerator will not work at all until the flue is cleaned with a long hasndled bottle brush.

If cleaning the flue and trimming the wick for a nice even flame does not work, manufacturers of kerosene refrigerators recommend what they call the 'inversion remedy'. We have not ever had to resort to this, fortunately. First the refrigerator has to be emptied, then it is laid on its front on a mattress or other protective layer for a half hour or so. Then it is completely inverted for a similar period before re-inverting back onto its feet. This is supposed to work, but I can't vouch for it.

We had that refrigerator for about six years, then we were given a newer model. It had thinner walls and was more like a modern refrigerator than the original monster though it was of the curved top era. Its fuel tank was smaller, lasting somewhere in the order of five days. This was particularly

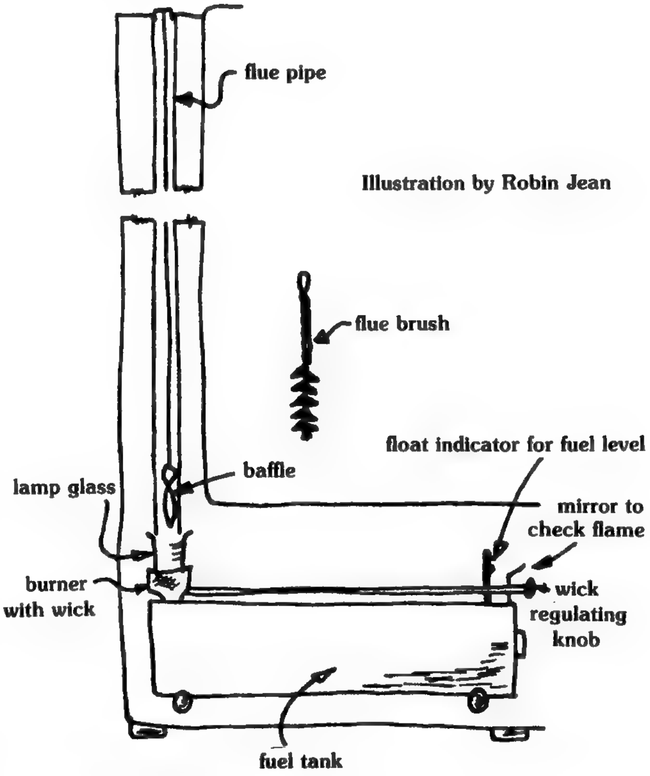
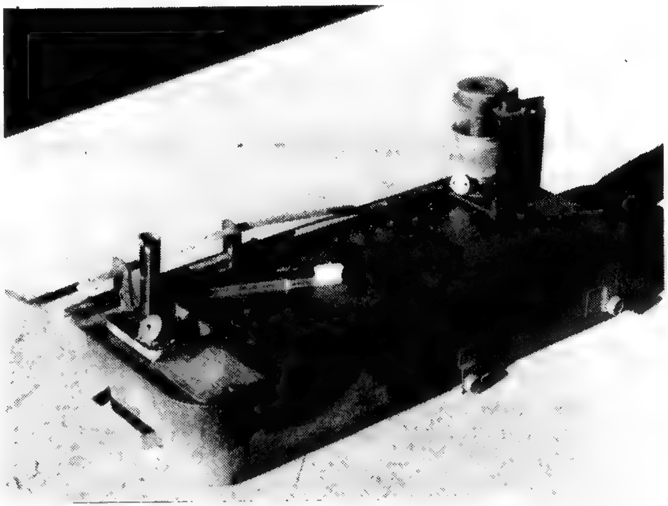


Illustration by Robin Jean



Fuel tank and burner of the first 'monster' kero refrigerator.

annoying as I have no real fondness for kerosene and I find it impossible to use it without at least some of it finding its way onto my hands. Curiously, the time between fillings got shorter as time went by. This was very puzzling until I worked out that time and my wick cleaning activities had shortened the wick so that it no longer reached the bottom of the tank!

All in all our kero fridge era lasted 11 very successful years. I would recommend them as excellent first refrigerators not only because they work well and have no moving parts to wear out, but also because the initial dollar outlay is so small. Our first cost $10 and the second was given to us. They are also useful as an emergency refrigerator for when there is a blackout, or when the lack of sunshine leads to load shedding in a photovoltaic powered electric refrigerator.

The disadvantages are that (1) the refrigeration process — the absorption process — is not as efficient as a compressor motor run refrigerator and hence is more expensive in energy use than an electric refrigerator and (2) they are messy to top up and the wick often needs trimming.

Finally the convenience of an electric refrigerator tempted us into buying an electric chest style refrigerator and also a chest style freezer. We have mixed feelings about these because they are not made as well as we think they should have been. Negotiations with the manufacturer are continuing. For those interested in how kerosene refrigerators are set up, I have attached a diagram of the innards of a typical example.

SOLAR REFRIGERATORS

David & Suzanne Lee of Torquay, Victoria and W.T. Hall of Nildottie, South Australia, asked about low voltage (12 V & 24 V) and solar electric refrigerators in **Earth Garden 50.** There is a fair bit of information on them in **ENERGY WORKS!** (pages 193-4 and elsewhere).

Despite the weak Aussie dollar, using a solar electric system for refrigeration is becoming more economic and more efficient since the introduction of compressor motors. From our research and feedback from readers we conclude that there are three ways to obtain a 12 V or 24 V refrigerator which will operate from photovoltaic panels. You can:

- Buy a solar electric refrigerator already using a compressor unit. These are available from most of the solar electric equipment suppliers who advertise in our pages.
- Have a compressor type refrigerator specially built for you, as suggested by Yvonne and Soren Rasmussen.
- Do it yourself. Convert an existing refrigerator, or match up a cabinet with a compressor unit, as suggested by Laurie O'Donnell.

LAURIE O'DONNELL, Uralla, NSW: We're still using a kero refrigerator and probably will be for some time. Refrigeration is not such a hassle here (on the Northern Tablelands of NSW) where the maximum temperature rarely exceeds 33° C in summer. It hit 42° C at Turill (near Mudgee, NSW), all too often! A goat or sheep carcass will keep for weeks here at this time of the year (June) without *any* refrigeration.

We'd like to have a fridge which would run off an expanded 12 V solar electric system. Our present 12 V system is not large enough to do this. I know it is possible to buy fridges which have been converted to 12 V supply by replacement of the compressor by one which runs on 12 V.

Well, in the article **The Solar Pack** in **Earth Garden 49** by W.L. James of the Solar Energy Research Institute of Western Australia (SERIWA), the author mentioned the **Danfoss** compressor units used in one of the refrigerator freezers involved. SERIWA sent me some info about these and I feel that an enterprising person could get a (probably defunct) fridge of appropriate size and fit one of the **Danfoss** units themselves, since they come as a complete unit. No 'gassing up' or work by a refrigerator mechanic should be needed. Of course, you could *make* a cabinet or even build it into a house in an appropriate spot.

YVONNE & SOREN RASMUSSEN, Mt. Molloy, Queensland: We have been running our home on 8 **Arco** solar panels and plan soon move up to a larger system using 20 panels and will send you more details later when this is installed.

We will then exchange our small 12 V refrigerator for a custom model which will be built for us by Cape York Refrigeration of Mareeba, Queensland. I'm sure lots of refrigeration people will do this for you if asked. We are planning to use two combined refrigerator-freezer units, each about 200 litres with a **Danfoss** 24 V compressor, as our solar electric system will be 24 V. We will have chest type cabinets with baskets in the sides and use 75 mm thick insulation.

◦ The Australian agent for Danfoss is Russell Armstrong Pty. Ltd., Adderley Street, Auburn, NSW 2144.

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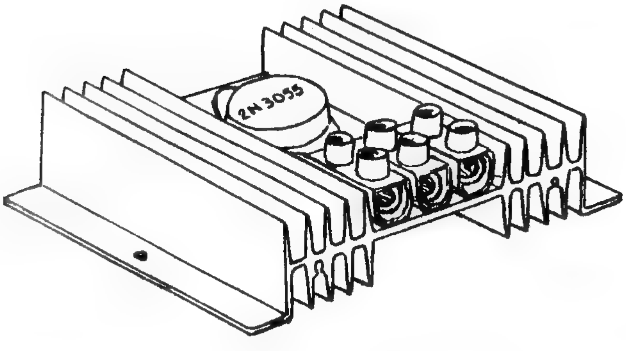
A shunt regulator

BATTERY REGULATION FOR A SOLAR ELECTRIC SYSTEM



50 watt shunt regulator.

By Peter van der Wyk

Preamble. Two of the major problems with batteries charged by a photovoltaic panel or array are those of overcharging and insufficient charge. The problem of insufficient charge should be overcome by either increasing the amount of charge — by increasing your generating source — or by decreasing your usage.

The problem of overcharging is best overcome by having a regulator in the system. You cannot use an automotive type of regulator with solar panels because that is only designed to regulate an automotive type generator or alternator. The automotive regulator causes the car generator or alternator to generate more or less power to suit the requirements of the car, whereas the output of a solar panel is dictated by the amount of sunshine falling upon it.

I fail to see why a solar regulator should be as expensive as the ones that I've seen so far seem to be. A few of the commercially available regulators that I have tested did not function adequately, in some cases due to major shortcomings in their design. The type of regulator described in this article is simple in construction and design, cheap, robust and versatile.

There are two ways of regulating batteries charged by a solar panel. One way is to 'burn up' all the power that is excessive to the requirements of the battery bank with a shunt regulator. The other way is to switch some or all of the generating source ON and OFF with a switching regulator to prevent the batteries from overcharging. The design that I am presenting here is of the shunt variety. A switching regulator is of necessity much more complicated.

This simple but effective design will enable you to build your own shunt regulator at a fraction of the cost of its commercial counterpart.

This shunt regulator is good for a single solar panel of up to 50 watts (W), but if you have more than one solar panel, don't despair, because it is possible to use any number of these regulators (one per panel) in your system. More about how you can connect the regulators later, but first I must tell you what you will need, how to assemble it and how it works.

What you will need.

The important bits of the regulator are the 2N 3055 transistor, a 15 volt 1 watt Zener diode (IN 4744) for a 12 V system and a sufficiently large heatsink. If you have a 24 V system you will need a 30 V Zener (IN 4751) and if you have a 6 V system you will need a 7.5 V Zener (IN 4737). The heatsink that I have used is one from Dick Smith (Cat H-3470) which has a recess for the components on both sides.

As well as this you will need a few small nuts and bolts (e.g. 1/8 Whitworth round head 9 to 15 mm long) to hold it all together, a TO-3 type insulated transistor kit (a mica washer and two plastic brushes), heatsink compound, a solder lug, a 20 amp connector strip and some reasonably heavy duty flexible insulated wire (between 1 and 4 square mm) in two colours (e.g. blue and red). You may also need a 6 amp blocking diode, but we will discuss that one later.

In the way of tools you will need a soldering iron with sufficient heat to be able to solder the wire, a small screwdriver, something to hold the 1/8 nuts, a centre punch, a drill, a 6 mm drill bit and a drill bit large enough to take the wire (insulation and all). If you have never had much experience with soldering you may find this work rather trying and even annoying. I would suggest you buy an electronics hobby book which covers soldering techniques, rather than attempt to give you a lesson on soldering here and now.

Assembling your regulator.

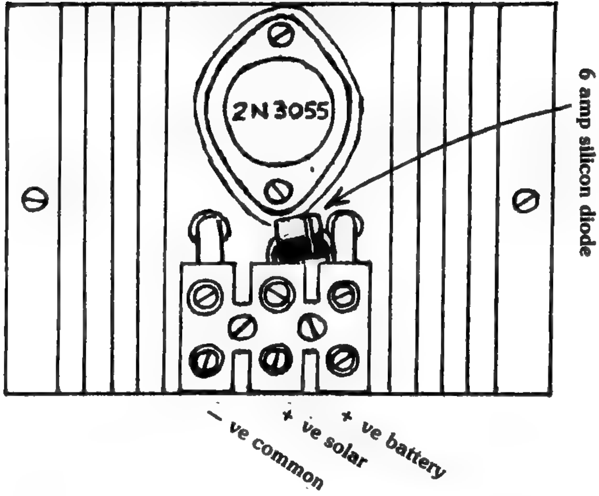
From the connector strip, cut off a section with three connectors on it and make sure it fits crossways inside the recess of the heatsink. You may have to trim the plastic a little bit. You are now ready to drill the heatsink.

Place the TO-3 mica washer over to one side of the recess of the heatsink, hold it steady and, using your centre punch, punch a mark in the centre of each of the four holes in the mica washer onto the heatsink. Drill out these four marks with a 6 mm drill bit. Make sure that when the transistor is bolted onto the heatsink that the two legs of the transistor fit comfortably through the holes without touching the edge. You may need to drill these two holes out a bit larger to ensure that the legs do not touch the edge of the holes.

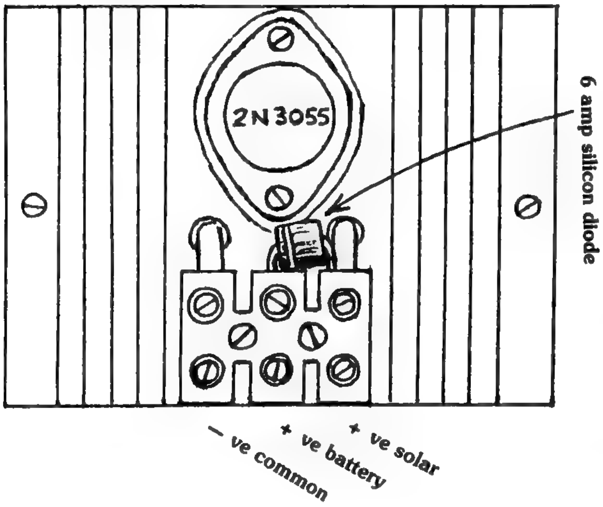
Place the three connectors level with the other edge of the recess of the heatsink and drill the two holes in the plastic so that they continue through the heatsink as well. Drill another two holes, large enough to take the wire, insulation and all, just above the two ends of the connector strip.

Now you can begin the assembling. Smear heatsink compound onto both sides of the mica washer, poke the legs of the transistor through the washer and place it onto the area set aside for it on the recess of the heatsink. Push

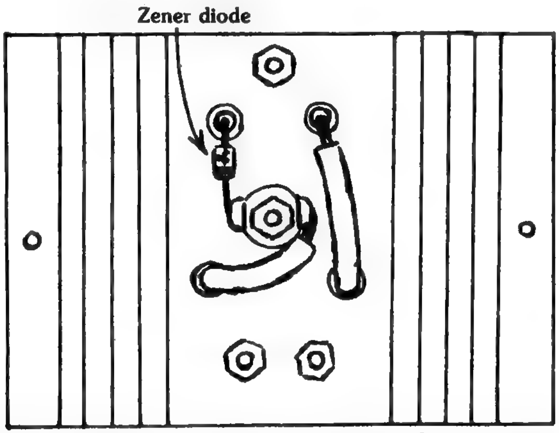
Increased voltage to battery



Decreased voltage to battery



Back view of heatsink



the two plastic bushes into the two bolt holes on the underside of the heatsink. Push two bolts through the transistor, mica washer, heatsink and plastic bushes, place the solder lug onto the screw which is furthest away from the edge, screw the nuts onto both bolts and tighten them up.

We are ready to solder the Zener diode into place and to solder the two wires onto it. The drawing shows where the Zener diode is connected between one of the legs of the transistor and the solder lug which is connected by the bolt to the metal case of the transistor. The black line around one end of the Zener diode faces towards the solder lug.

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The positive wire (preferably red) has one end of it soldered to the solder lug and must be long enough to fit through the hole in the heatsink and into one of the three connectors in the connector strip. The negative wire (preferably blue or black) is soldered onto the remaining leg of the transistor. Likewise this second wire is poked through the hole in the heatsink and must be able to fit into another connector in the connector strip.

If the wire is a bit stiff, I find it easier to have the wires cut to size and both ends tinned before soldering the first end into place and then to poke the wire through the heatsink and into the connector strip before the connector strip is bolted onto the heatsink. It may also be advisable to fit the 6 amp diode into the connector strip before poking in the two wires. The line around one end of this diode faces away from the red wire referred to above.

Make sure that you can poke wires into the other end of the connector strip. If not, you may need to trim the ends of the wires down a little bit. You can now screw the connector strip down onto the heatsink and after a preliminary check it can go into service.

How it works

There are only two electronic components in this regulator design which are responsible for making it work as a battery regulator. The Zener diode will only pass a current if its voltage exceeds its rated voltage, thereby switching the transistor on. The transistor will then 'burn up' all the power that would otherwise cause the voltage to keep rising above the switching voltage of the Zener diode. It is the heatsink, of course, which enables the regulator to absorb as much as 5 amps, as the transistor would overheat on its own.

You can see that the voltage at which the regulator works is dictated by the voltage of the Zener diode. It then switches on the transistor which 'burns up' the power until it is switched off again. The heatsink absorbs the heat from the transistor and spreads it out to be easily dissipated into the atmosphere.

The easiest way to check that your regulator is working properly is to connect the solar panel to the regulator and then connect it not to the battery but only to a voltmeter. If your solar panel is okay and is exposed to direct sunlight the regulator should start getting hot and the voltmeter should read the operating voltage of the regulator. Once your regulator is assembled, this is also a good check to see if it operates properly. As soon as a battery is connected and it starts charging the regulator should cool down rapidly.

Here I should point out that there is nothing to stop you using a 12 V type solar panel to charge a 6 V battery. If a 6 V regulator is connected (switching on at 7.5 V), this would prevent your 6 V battery from being overcharged once the battery is fully charged.

Also, if you have a reasonably large battery bank (e.g. 500 amp hours), it is not necessary to connect a regulator to the first solar panel as one solar panel represents only a trickle charge to this size of battery bank (assuming the solar panel is charging at a rate of between 2 and 4 amps). The easiest way to put this idea to the test is to connect a solar panel to your battery bank in a fully charged state and then to watch how high the voltage will climb after a few hours of direct sunlight. If this voltage never climbs above 14.5 V to 15 V there is little point in connecting a regulator to this panel.

Summary

This regulator is designed to handle a single photovoltaic solar panel rated at a nominal 50 W. Several of these regulators can be used together, one with each panel, by connecting the positive leads from the solar panels to the positive inputs of the regulators and connecting the positive battery leads to the positive outputs from the regulators, but only if the blocking diode comes after the regulator and before the battery. All the negative leads can then be connected together and to each regulator.

This design is also suitable for other charging sources, so long as the rate of charge is no more than a nominal 50 W. Do not attempt to use more than one regulator per charging source as no two regulators switch on at precisely the same voltage, so that only one regulator per charging source will work anyway.

The cut-in voltage of the regulator cannot be altered, but you can vary the output voltage by about 0.6 V by having the diode of the regulator connected either before or after the regulator. With *Century* Power and Lighting batteries it is recommended to have the regulator cut in so as to keep the battery below 14.2 V, whereas most other batteries can cope with a voltage of between 14.5 and 15.5 V. If you do use the diode on the regulator, you should bypass the diode in the connector box on the back of the solar panel.

The diode on the regulator can be reversed so that the positive input and output are also reversed. This is the simplest way to increase or decrease the point at which the regulator cuts cut in by 0.6 V (see diagrams). But you must remember that if you wish to use several regulators in the same circuit that the blocking diode must come after the regulator.

You must place the regulator in a well ventilated position that is out of the weather.

Rainbow Power Co.

If you aren't a handyperson you can have a 50 W shunt regulator made to order by Peter van der Wyk. Peter will design and install 12 V home power systems and convert sewing machines or battery powered appliances to 12 V. He also assembles rechargeable torches with bright halogen globes.

• Send SAE for prices and details to Rainbow Power Company, Peter Pedals, C/- Nimbin Neighbourhood Centre, P.O. Nimbin 2480.

MORE WARNINGS ON IMMERSION HEATERS

In **Earth Garden No. 49** mention was made of the heating of bath water using immersion heaters and washing machine elements.

Numerous fatalities have occurred by the use of appliances, especially those connected by flexible cords, in wet situations such as bathrooms, laundries and swimming pools. Water and electricity are an extremely dangerous mixture especially where bare feet, minimum clothing and wet skin lower body resistance. An electric shock from voltages in excess of 2 volts across the body of a person immersed in water may be sufficient to cause paralysis.

It would be extremely easy for water to enter the plug of an immersion heater when used in or near a bath and this could allow the bath water, bath and any surrounding wet areas to become 'alive'.

The heating element of these heaterrs is surrounded by a special insulation (powdered magnesium oxide) and an outer metal sheath. Bending could cause the insulation to fracture and the element to touch or approach the outer sheath, reducing the insulation resistance, or, allow the outer sheath to crack, creating an electrically dangerous situation.

Electricity is safe energy when used correctly but the importance of using the correct methods and equipment cannot be too highly stressed.

N.C. Watson, Secretary, Energy Authority of N.S.W.

° Contact the Energy Authority of NSW , GPO Box 485, Sydney 2001 for their leaflets, **Electrical Safety Guide** and saferty notes on **Portable Electrical Hand Tools.**

Never leave an electrical appliance where it can fall into the bath or basin. Don't leave unattended with children.
Unplug after use.

More land lines

Share for sale in 800 acres property, south of Woodburn, north coast of NSW. Abundant wildlife, eucalypt forest, bush and heath, bordering Bundjalong National Park and within reach of untouched beaches and fishing.

Share includes private use of 10 acres with attractive 4 bedroom homestead with verandah and pergola, large working shed, generator, greenhouse, above ground swimming pool, various fruit trees, telephone. Two semi Arabian horses if interested. Part ownership of 650 acres, use of community facilities such as tractor and implements. Community is set up with unique legal structure. Share priced at $69,500 o.n.o.

Our aim is to live in peace and harmony with each other and nature, work towards becoming more self sufficient, using permaculture principles, organic gardening, etc. No illegal drugs.

Please write to: Rosemary Zillig, 46 Ubrihien Street, Lismore, NSW 2480, or phone (066) 218939.

South Coast ranges/Tuross River: 52 acres fully timbered bush block for sale, with 1 1/2 km major creek frontage; approx 35 km from Bodalla by good gravel and bitumen roads. Mostly sloping land with west to north aspect, not suitable for cultivation but great for remote dwelling. Price $32,500.

B. Loder or G. Dovey, 'Belimbla', C/- P.0. Bodalla, NSW 2545. Phone (044) 779309 (evenings).

Lady wanted (late 30's) to share house at Balgal Beach (north of Townsville) with one other and 8 year old girl. Prefer vegetarian, non smoker. My pet hates: TV, radio, pop music. Into gardening, music, reading, natural health.

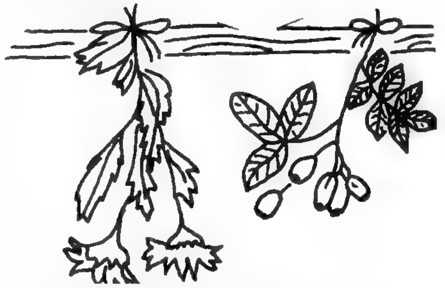
Write to Shirley Prout, Box 433, Ingham, Qld. 4850.

10 acres, good area, half forested, with many tall and varied trees. Valley views, picturesque setting. Includes three bedroom country home, renovated, new paint, new roof, new plumbing, slow combustion stove, gardens, fruit trees, dams. Good land, fully set up, 10 miles north east of Gympie, 35 minutes to Tin Can Bay. Price $56,000 ONO.

J. Ambrose, M.S. 565, North Deep Creek, via Gympie, Qld. 4570. Phone (071) 833841.

Land for sale: 100 acres of creek frontage (leasehold), 1/3 forest, 1/3 regrowth, 1/3 pasture. Ample water. One boundary is Barramungle Creek, opposite side is Colac pipeline, front entry over Gelibrand River. Three allotments (different sizes). Ideal for a community setup. Power pole on the land, telephone connected, shed & cottage. Your own piece of private valley facing north and bordering State forest. At the end of a gravel road, only 2 miles from Colac/Apollo Bay Road; half hour to Colac, half hour to the coast. Price $70,000.

For directions, phone Rene´ & Garryette Hafliger (059) 674481, Eacotts Road, Hoddles Creek, Victoria 3139.



The Herbal Medicine Chest

Nancy Evelyn, Second Back Row Press, Katoomba, 1983, paperback, 47 pages, illustrated by Bronwyn Wafer. Price $3.95.

This is a lovely little book, offering an introduction to using remedies from the herb garden. Tells how to make ointments, poultices, inhalants, rubs, teas and infusions.

• In spite of the general dissatisfaction most of us feel with chemical treatments, it takes a certain amount of courage to try out Grandma's recipes in an emergency. I suggest buying a few ointments or oils at a time and trying them out as you go, until you feel confident enough with herbal treatments to throw away some of the synthetic ones.

For sale: Sunshine Coast hinterland, 5 minutes from town. Four bedroom family home on two flood free acres (tastefully renovated high set Queenslander). Sealed road. School bus to front door. Many fruit and ornamental trees, organic garden, sweet rainwater, modern pumping. Close to State Forest recreation areas, tennis, beaches, country markets. Price $62,500.

Sonja Raymond, Kenilworth-Eumundi Road, Kenilworth, Qld. 4574.

Responsible, energetic, caring couple required to caretake a beautiful property on the Atherton Tablelands in the Ravenshoe area.

Phone (070) 976303, or write: Frank McGhie, P.0. Box 79, Ravenshoe, Qld. 4872.

Gippsland, 45 acres, undulating timbered natural bushland, providing ample building material. Good dam. Soil tested, suitable for mudbricks. Good homesite with excellent view. Abundant wildlife, road frontage, 15 minutes to large town, 2 1/2 hours Melbourne. Power and phone 1/2 km. Price $28,000 neg.

Phone (051) 446162. I. Francis, 201 Desailly Street, Sale, Vic 3850.

Our land has 1 river, 4 creeks, many creeklets & springs, wombats, lyrebirds, emus, bower birds and more. All forest, some open, some scrubby; mild climate of S.E. corner of Australia. State Forest on most sides. National parks, lakes and beaches nearby. Ultra secluded, but access okay. Hate selling, but need cash. Small lots, (app. 40 acres) from $18,000. Bigger lots (over 100 acres) from $30,000 might interest partners, communities, shareholders.

Please write to Anne Martin: 4/161 Ernest Street, Crows Nest, NSW 2065, including contact phone no. if possible.

Two x 1/8th shares in established community with corporate structure on 200 acres near Lismore, NSW. Includes small cabin, dams, own 4 acres fruit trees, plus share in communal facilities; kitchen, bathroom, laundry, telephone, generator, 12 V power, bearing orchard, carport, dairy. Near school. Approved M.0.

Write R. Woodford, P.0. Rock Valley, NSW 2480.

LOO REVIEW

By Chris & Rhonda Martin

We wrote about our Farralones composting toilet **(The $300 super loo)** in Earth Garden 46. Since then we've had a number of enquiries about it, so we think a follow-up is in order to update the original article.

1. Mick Allison of Wormborough Farm **(Letters**, EG48) kindly offered some composting worms for us to try in an effort to do away with having to turn the pile with a pitchfork. Unfortunately this was not successful, due to the high resin content of the raw Cypress Pine sawdust we are using. Aged sawdust with a low resin content would have been more suitable, but it not available locally.

2. We really feel that a 300 mm vent and not the 100 mm (4 inch) vent shown in the EG illustration (page 20) is needed to provide an adequate draught and air volume over the decomposing pile.

3. Kiln-dried timber is preferable to green sawmill timber as there is little shrinkage, thus reducing the need to use a large amount of caulking compound to keep out flies.

4. We found the squat position quite awkward and would recommend a minimum of 300 mm (12 inches) between ground level and the seat height to provide a reasonable level of comfort. As we were already stuck with this problem, we built 'thunderboxes' 200 mm up from the original seat height. This has broken the airflow pattern under the floor and at times has caused an odour problem as some of the air becomes trapped in the thunderbox and escapes via the toilet seat. In the long term we will have to raise the seat floor.

5. It is probably a good idea to use good quality toilet paper as in our experience the cheaper paper has some difficulty in breaking down.

6. There is some difficulty — and possible embarrassment — in vetting casual users to see if anyone is on antibiotics or 'the Pill'. It is possible that some of the odour problem is due to someone slipping past the screening process. Possibly a sign reading: *"If you're on the Pill, buzz up the hill"* , with a child's play shovel hung underneath might serve as a large enough hint.

7. With hindsight we would probably not have faced the inlet vents into the prevailing wind. Prospective loo builders should consider this, as an unexpected blast of air can cause the sawdust to go up, not down and on the odd occassion in a big wind the loo paper has actually escaped.

8. We used Masonite coated with Estapol for the covers over the external access doors to save weight. This proved to be a bit of a disaster as they are not weatherproof and the Estapol has peeled. Thin waterproof plkywood or a lightweight fascia timber that has a high natural oil content, such as Western Red Cedar, would be an improvement.

9. Depending upon your climate, we would support Lindsay Corben's comments in his article **(An elegant two-holer)** in the same issue about not using the loo just for urinating. In many areas the evaporation rate would not be high enough in winter to cope with all round use. The only other alternative is to use a larger amount of sawdust than the recommended 500 g coffee tin full, but you might find that you will run out of space in the chamber.

10. All exposed timber, particularly inside the chamber and flue, should be oiled, stained or painted with a compound such as Estapol 7008 due to the long term corrosive nature of the vapour. Estapol is recommended for the inside of the flue as it is just about impossible to take apart once erected.

11. We mentioned in the original article that we were going to submit some of the first batch of compost to the local Health Inspector for testing. We have not done this as we would prefer to wait until we are completely happy that the system is working to peak performance.

Our 'build your own' compost toilet is very similar to a number of commercial units accepted by many councils for poor soil absorption areas, so why pay $2,000+ when you could build it for around $300? We hope this additional information has answered at least some of the questions we have been asked.

Visitors get used to the composting loo when there is no alternative and we are still basically pleased with its operation and the compost that is being used in the orchard.

A BUSH TOILET

Some readers may be interested in my solution to the temporary/permanent bush toilet, especially where drainage is bad and rocks are encountered in the pit.

First, dig the hole only a few feet deep and put a couple of sticks across the top to sit on. Then drink the contents of a couple of dozen beer cans, seal the ends with *Plastibond* or similar and throw them in the pit , adding 40 litres or so of water.

There will be some smell for a few weeks until the right bugs get going, but after that your bush toilet will be odorless, won't splash (which is important) and you'll have no bottomless pits to dig, which fill up with water anyway.

Doug Leverett, Kempsey, NSW.

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THREE PLY

By Carolyn Burgess

I usually use my handspun wool as singles or two-ply. This is because of the thickness of my spinning. In three-ply it would be too thick to use.

I have always wanted to try three-ply because of the smoothness of the thread and because I had read that it had "superior draping qualities".

My chance came when our two Merinos were shorn for the first time. Their long, fine fleece is almost impossible to spin thickly. It needed to be plyed to be usable and three-ply would be best.

Now my natural laziness came into play. It took *so* long to fill a bobbin! I like to see a fairly quick return for my labours.

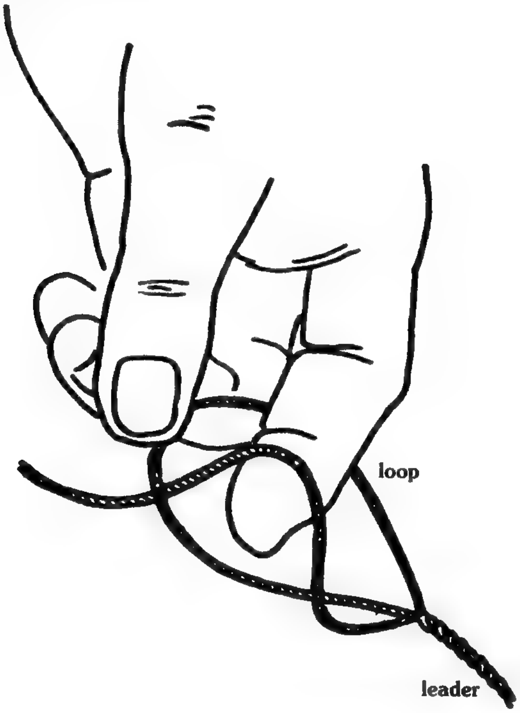
This is where I remembered about Navajo plying. I don't know if it is an authentic Navajo technique or not, but let's call it that. It is a way of making three-ply off one bobbin by *chaining* — as in warp chain or crochet chain — the thread as you treadle.

It sounds hard, but once I got the hang of it, it was fast and effective. Here are the steps in the method I used. This is not the only way, or even the best, so experiment and find out how you like to do it.

I make each chain 'link' quite short, though I know some spinners make them very long, up to a full arm's length.

Steps

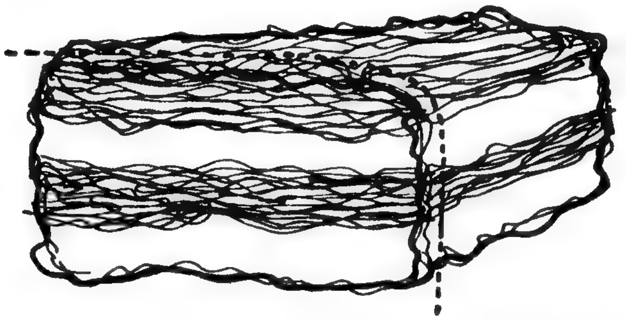
1. Put a filled bobin on your Lazy Kate and place it on your right.
2. Tie the thread to your starter in a loop.
3. Pulling your left index finger through the loop, hook the thread from the Lazy Kate and draw it through the loop, as illustrated.



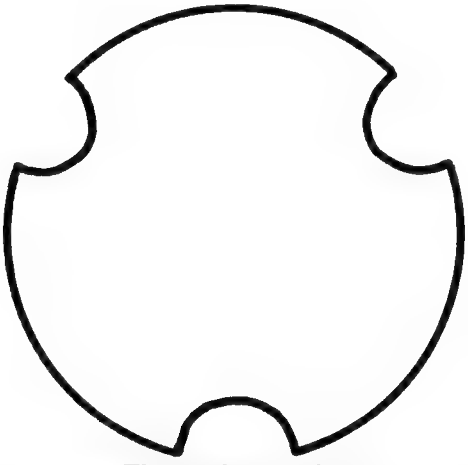
4. Repeat this action while slowly treadling your wheel to ply.

I found this method gave me a smooth thread and the 'link joins' were not lumpy, but then my original thread was not perfect!

One advantage of this method is that you can achieve a multi or two-coloured effect without getting a 'barber pole' pattern. By carding or combing a white and brown fleece in layers and taking wool from a cross-section of the batt, or just alternate handfuls, you get a two-coloured thread. You can then Navajo ply this, making one colour to one link; thus getting a two-coloured three-ply thread. But take it slowly the first time.



'Batt' of combed fleece in layers. Tear through area shown as dotted line and spin.



Three-ply template

Another three-ply trick I have heard of, but must admit I have not tried, is using a plying template. I will pass it on in the hope that it will help or at least interest someone.

It is similar to a rope-making template. To make one, cut a circle of plywood about 8 cm across and cut out three semi-circles, one each at 10 o'clock, 2 o'clock and 6 o'clock.

Steps

1. Place filled bobbins on the Lazy Kate and tie threads to the leader. Place each thread through one of the semi-circles and hold it in place with your thumb, forefinger and little finger.
2. Treadle slowly, using your fingers to put tension on the threads.

The template ensures that the threads are tensioned and meet at an angle.

So — happy spinning. I hope one of these methods will encourage you to give three-ply a go.

EARTH BUIDING ACCESS

EARTH BUILDING SERVICES

Please send SSAE to the addresses listed for further information.

Earth builders & designers

Russell Andrews and Associates, PO Box 366, Bendigo 3550. Building design consultants, specialising in mudbricks.

Rex Candy, Back Wombat Road, Boisdale 3860. Mudbrick builder.

Ian Factor, 1 Somme Avenue, Wentworth Falls 2782. Design, drafting and consultation on mudbrick homes.

Mudlark Builders (Rick Haughton and Dael Allison), Warrawillah Road, Mooral Creek 2429. Mudbrick builders, designers and consultants, with strong emphasis on solar design.

"Our main work is with owner builders in NSW, designing to their ideas and specifications and advising them on how to go about the house construction. We conduct intensive mudbrick and owner building workshops every two months at Gallery 460, 460 Avoca Drive, Gosford 2250. Phone (043)692013."

Rammed earth builders

Max Kinsmore (Pise´), 77 Lyndoch Road, Gawler 5118.

Ramtec Pty. Ltd. , (Stephen G. Dobson), 105 Forrest Street, Cottesloe 6011.

Stabilised Earth Structures Pty. Ltd. (Giles Hohnen), 105 Bussell Highway, Margaret River 6285.

Earth building courses

Earthways Community, Wollombi 2325. Intensive weekend courses in mudbrick building or mudbrick house design conducted by Brian Woodward.

Dr. Robert Rich, Moora Moora Co-operative, PO Box 214, Healesville 3777. One day house building courses, second Saturday of each month (or by arrangement).

Mudbrick moulds

Self Sufficiency Supplies, Forth & Clyde Streets, Kempsey 2440.

Hand operated earth presses

Cinva Ram, Elder Smith Goldsbrough Mort Ltd., 5 Prohasky Street, Port Melbourne 3207.

Dalrac Mud Brick Press, Going Solar, 320 Victoria Street, North Melbourne 3051.

Machine made earth blocks

Earthbricks, Russell Head, NSW, phone (02) 442836.

Terra Firma Blocks Pty. Ltd., Unit 8, 21 Tepko Road, Terry Hills 2084. Machine compressed earth block machines and blocks for sale.

Polycom Pty. Ltd. P.0. Box 187, Castle Hill 2154. Compressed earth block machines for sale or hire.

Mudbricks for sale

Earth Bricks (Neil Druce), PO Box 54, Deniliquin 2710. Mudbricks made on your building site, or delivered.

Earthwise Constructions, PO Box 170, Kangaroo Flat 3555. Bendigo area.

The Mud Brick Circus, 407 St. Georges Road, North Fitzroy 3068. Mudbrick making equipment and information.

Owner Builders Associations

Bega Valley Shire Owner Builders Association, John Constable. Phone Bemboka 30373.

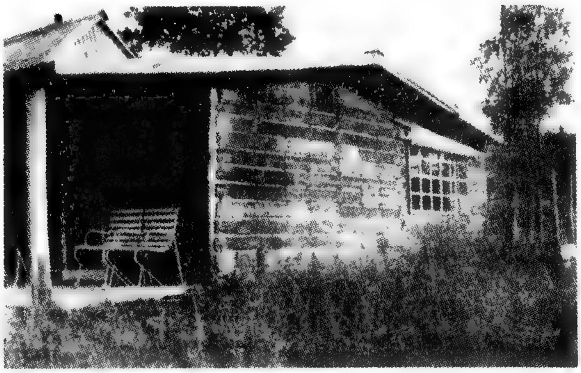
Maffra-Avon Owner Builders Association, PO Briagolong 3860.

Manning Owner Builders Association, C/- Dave Rhodes, RMB 31, Bobin 2429. Phone (065) 505188.

Bendigo Home Builders Club, PO Box 906, Bendigo 3550. Membership $10 per family annually.

Earth Builders Society of Queensland, C/- John Farnbach, Dundas, via Fernvale 4305.

Homebuilders Association, PO Nimbin 2480. How to play the planning game (booklet), $3.00 posted.



STICK IN THE MUD

Merrick Fry

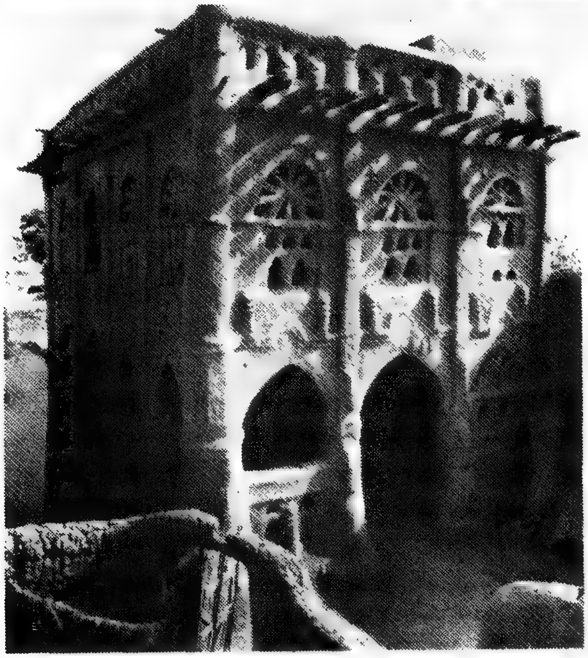
Boobook Publications, Balgowlah, NSW, paperback, 77 pages, illustrated. Price $9.95.

The first crude buildings in Australia were made in Sydney Cove from wattle and daub. Walls were first made of wattle saplings and sticks woven through upright poles, then wet mud was slapped on and pushed into this framework.

Merrick Fry's recipe takes sticks and mud as the basic ingredients of a more durable building of earth and timber. Boards are attached to upright poles on the outside and wire netting on the inside. The wet mud is pushed into the cavity between the two (the netting is nailed up as you go up).This simple low cost method of earth building is well explained, step-by-step, with good photos and detailed illustrations by the author, an artist who spends a lot of time in the bush. Plenty of handy building tips are included.

At a cost of around $500, you could build a stick in the mud house just for the experience — and have a beautiful cabin, workshop or studio. Inside walls can be whitewashed and curved walls are fairly easy to build.

EXHIBITIONS



Mali House in West Africa

SPECTACULAR VERNACULAR

August 22- October 6, 1968. Open every day from 10 am-5 pm (noon-5 pm Monday), Long Gallery, Australian Museum, 6-8 College Street, Sydney. Admission is free.

This exhibition of 93 colour and 38 black and white photographs documents the 'spectacular vernacular ' mud buildings of Mauritania, Senegal, Morocco, Niger, Mali, India, Pakistan and Afghanistan.

In desert areas treated mud is a building material which is long lasting (as shown by 250 year old Afghan shrines), versatile and ecologically sound (as it is usually on the building site and is easily renewed). Yet mud is being replaced by cement, which is expensive, does not suit hot climates and has to be imported.

Divided into sections, the exhibit systematically explores climate, mud as a building material, roofs, walls and embellishments, wind and ventilation systems, Mali mosques and Afghan shrines.

ARCHITECTURE IN RAW EARTH
Exhibition Itinerary, 1986 Queensland Tour

Dates	City/Town	Venue
14/7-19/7	Bowen	Library
18/8-23/8	Burdekin	Theatre
1/9-13/9	Atherton	Library
6/10-11/10	Gladstone	Calliope Lib.
20/10-25/10	Cloncurry	Shire Hall
3/11-22/11	Mt. Isa	Civic Cent.

See **Expo Goes North** (EG50). For further details, contact the Queensland Arts Council, Crn. Mary & Edward Streets, Brisbane 4000. Phone (07) 215900.

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Low voltage lights

By David MacMunn

I have been interested in low voltage lighting for about five years. This correlates to the time I moved to the community where I still live and had my first dealings with kerosene lamps and candles.

It didn't take long for me long to decide that kerosene pressure lamps and I weren't meant to mix and that candles, despite their romantic appeal, offered little as an intense light source.

My earliest venture into low voltage lights was the purchase of two 8 watt (W) caravan fluorescent lights. They were certainly rather plasticy and like 'dinky toys', but there was mild rejoicing at the introduction of this press button lighting. The light was barely adequate and certainly didn't encourage prolonged reading, but it was a great boon when we arrived home late at night carrying sleeping children. I then bought a 13 W fluorescent light which had improved light output but was still hardly a robust piece of equipment. My search continued.

Next came a breakthrough. I was now the proud owner of a 12 V 20 W fluorescent light which moved our lighting at last into the realm of adequacy. The strong bright light made the 8 W and 13 W lights look like pea shooters compared to blunderbusses. My enthusiasm about this was probably a bit strange to friends with 240 V lighting, but it really made a difference. To stay up at night until you *wanted* to go to sleep – rather than when your eyes were sore – was really something!

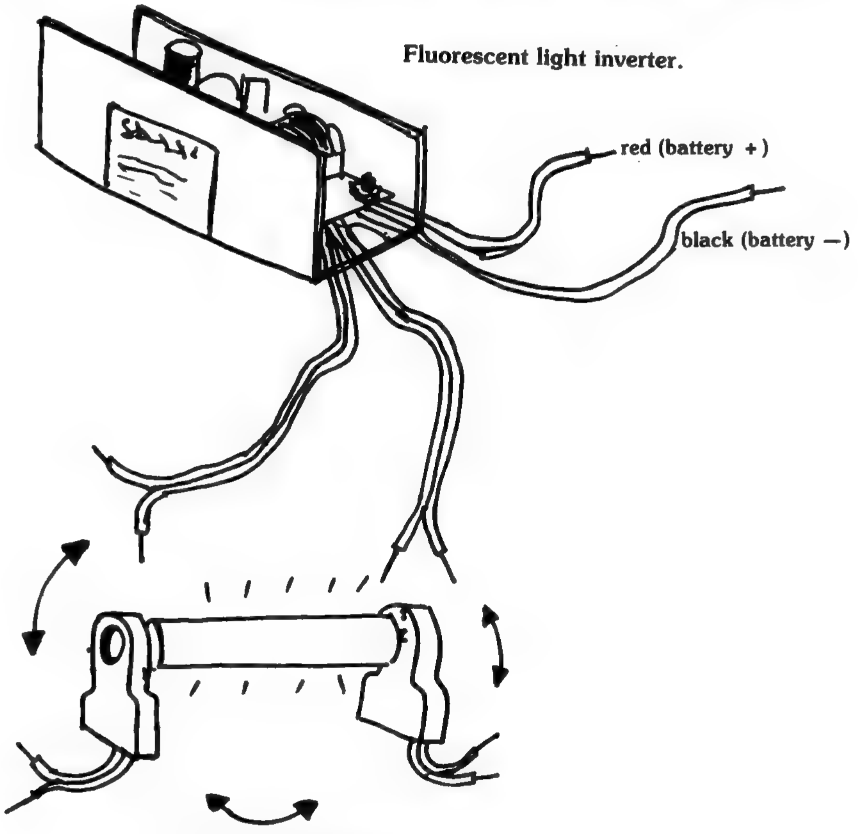
The completion of another house two years later brought my attention back to lighting. Initially, I mainly installed low wattage incandescent globes because I had the necessary fittings, which I'd found at the tip, so they were cheap. I also transplanted the 20 W fluorescent light from house no. 1. I found the globes were certainly adequate for light output. They were under $3.00 each and came in 15, 25, 40 or 60 W outputs. However, in the power usage stakes, globes are greedy. The ammeter on household loads reaches new heights when you turned on a few of them!

So the lighting I'm now installing is of two types available at a local solar energy shop, Blue Ridge Solar, in Murwillumbah. The first is called a 2D miniature fluorescent light. It employs a special compact fluorescent tube only 140, mm square, designed to allow mounting inside a housing with diffuser ('cobblestone light') or pendant mounting.

The great advantage of these lights is that for power usage of 16 W, which is 1.3 amps at 12 V, they are said to give out a light of the same lumen value as a 100 W globe. From my experience, this is perhaps somewhat overrated, but they certainly aren't bad at all. There is very little heat loss, they allow a light and shade to be employed and they certainly don't have that 'factory' atmosphere of a normal fluorescent tube.

To allow the tube to 'strike', an inverter is employed which converts the incoming 12 V to the 240 V required to operate the light. The inverters can be mounted either in the cobblestone style mounting or in a pendant type light inside an oversized ceiling rose or in the ceiling.

These lights suit me for most applications, but I still wanted an efficient light to use as a reading lamp. Another new light, also available at Blue Ridge Solar, should do the job. These lights employ a miniature fluorescent tube as shown in the diagram, which is available in three sizes: 5, 9 or 13 W. The tubes are only 120 mm, 140 mm or 185 mm


Fluorescent light inverter.

N.B.: Leads to fluorescent tube can be connected to either end.

long, which makes them ideal for mounting in a reading lamp. They are very efficient in power usage, giving out light equivalent to 25 W, 40 W and 60 W incandescent globe respectively. Also, since the tubes need no starter as the 16 W 2D tube does, they have a life expectancy of some seven years. Not bad, eh? The inverter employed is somewhat smaller, keeping down the overall price.

These are some of the prices I got from Blue Ridge Solar (May 1986):

16 W tube – $16.50 2D Inverter – $15.00
13 W tube – $12.60
9 W tube – $10.14 Inverter $12.50
5 W tube – $ 8.12
2 pin/4 pin connectors $2.50

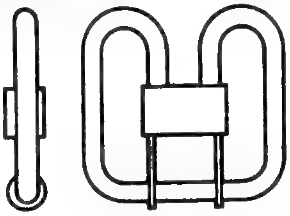
Converting 240 V fluorescent lights to low voltage.

So my quest is satisfied for the moment. Along the way, however, I've found two things of interest. Firstly it is certainly a worthwhile, cheap and easy proposition to convert 240 V fluorescent lighting to low voltage lighting yourself. I have converted two so far. The first was a 240 V desk lamp, advertised as 'dead', which I bought for $4 at local market stall.

I then purchased the appropriate inverter for about $15 (in this case 12 V, 20 W). The inverter can be seen in Fig. 3. They have two sets of twin core leads and two single core leads (black and red).

I first ground down the ballast inside the lamp base to accommodate the inverter and then attached the wires as follows: I connected the two twin core leads to the two twin core leads coming from each headstone at either end of the tube mount and attached the red and black leads to the battery + and - respectively via extended leads.

Initially I had problems with the inverter heating up and components failing, so I mounted it on the back of the lamp base and with greater allowance for heat dissipation had no more problems. Total cost was $19.



16 W 2D fluorescent tube.

My next effort was a 20 W standard fluorescent tube I got from the demolition yard for $7. Again I simply installed the inverter, bypassing and extracting all the unnecessary components. This one also performs well for a total cost of $22.

Using 14 V.

My second discovery was that although low voltage lighting may be rated at 12 V, it performs better if given an extra 2 V. I use a bank of seven 2 V Century home lighting batteries, which gives me a 14 V system. All the lights appear to run more efficiently and the light output difference is definitely noticeable and appreciated. I also use 14 V to run my car stereo sound system and have used it for other appliances.

Also on the power incoming side, a 14 V battery bank has the advantage of being self regulating. The output voltage from solar electric panels of around 17. 5 V will still charge a 14 V battery bank. When fully charged the 14 V battery bank can reach around 16 V, at which point charging will be minimal because of the small voltage difference between the panels and the battery bank. Certainly a bonus!

Inventing the Future

The story so far ...

After restless world wanderings, Patrick f. (for ffyske) Howden, B.Sc., Ph.D. , inventor and tinkerer, Ecotechnic peasant , and author of ***Eco-Logistics****, married Munni and came to rest on Macleay Island, Queensland, where they pursue a life of* ***Genteel Frugality*** *(see Earth Garden 49) on a block of land named Holey Ground.*

Their home base was recently the scene of the ***First International Symposium on Backyard Tech/Self Reliance*** *when 100 folk visited the island and the turbulence from a TV chopper threatened to denude the exotic trees. " I felt like nicking their rotor to use as a windmill", writes Pat, "especially as the energy they used simply in landing is equal to my power needs for nearly 50 years!"*

GENTEEL FRUGALITY - Part 2:

By Dr. Patrick f. Howden

By continually making simple — almost insignificant — changes in home habits, an adventurous minority have shown how to save a small fortune in time, cost, energy, resources & effort through becoming partly, potentially or group self-sufficient, without reducing the quality of life.

Naturally, a little more time is needed at home on the simple *Do it Yourself* (DIY) life support systems (whether home is rural or an inner city suburb), but considerably more time is saved by less frequent office or factory visits. By applying these techniques collectively, society can save lots of energy, pollution & mindless destruction of nature.

Slow crises. But society doesn't notice creeping crises in the form of less space/freedoms/ privileges/ energy/spare time/spending cash, manifesting in massively increased work hours needed to pay for basic transport, food, rates, taxes, fun & security. Only a lifestyle of Genteel Frugality in the direction of greater responsibility for our own individual survival can circumvent these crises.

Ultimately this could come about through cottage industries + robotics

— how else to make bike tyres? Set 80% as a goal for the degree of home or community self reliance. To start an edible jungle, wood fuel lots, your own business, perennial vegetables, to dam water where before was only concrete, grass, hedges or sterile human warehouses, to set up your own transport or natural fertilisers & pesticides. Surely this is a closer approximation to an ideal bio-economy without which properties will soon be relatively valueless.

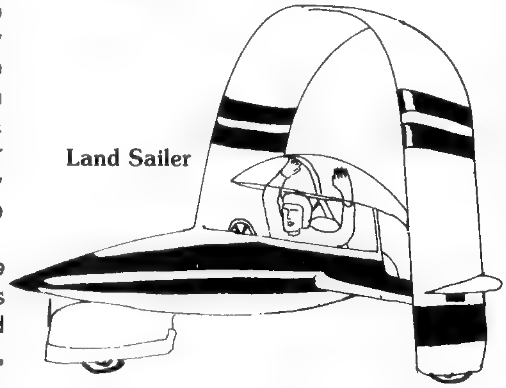
If we are prepared to recycle ourselves & not eschew all *free meals* (blackberries, seaweed, rabbits, field herbs, food waste, metal, straw, water, old cars, dumps, your hoardings, bartering, rubble ex buildings, solar & wind power), then Backyard Tech believes there is always an alternative solution to all practical problems. That our quality of life, our bodies, our relationships & our attitudes can only improve in searching for these alternatives. That conservation on a wide front is the greatest *source* of energy & capital, but that *the world's biggest pollution is spending money.* Even 1 spent cent = pollution + waste somewhere.

To buy or not to buy. We need to ask ourselves before buying anything:

Do I need it? Will something else do instead? Will it last? Can I borrow/share/make it? Has it minimal packaging? Can I buy secondhand? Has it other uses? Does it use low power?

Such questions continually applied rapidly negate your inflation rate. What better place than an urban home to become aware of the *Good Life,* the practical panorama of self-sufficiency + alternative tech (AT) skills for all of us, with many projects both for beating the system & for enhancing our lifestyle at home, using free/low cost, local resources as wind, solar, bees, sticks, water/wave power, mudbricks, animals, organic food growing, preventive medicine, diets & recycling waste of all types.

Soon you will find a new, more sharing, awareness & dependency on nature & neighbours than ever before, especially as healthy family projects to help us disconnect from unhealthy *Big Bang* energy, education, food, transport, motorway, warfare & nuclear systems. Yes, there are plenty of articles & books on self-sufficiency in a city flat! No, you don't need a big demotivating, enervating farm. Start a modest plot.



Actualising attitudes. One big problem: self reliance threatens government, councils, multinationals & unions by making them redundant.

We need to invent the future & we have 20 years to do it if we start now, because there are about:

- 20 years before minerals & fuel run down & hence even the energy to produce compatible machines;
- 20 years till trees plantings mature & deserts are green;
- 20 years for society to accept a new technology; &
- 20 years to redistribute wealth/poverty equally.

Education will have to include making, fixing, growing, nurturing, creativity, positive attitudes + making a business.

Most people think about self sufficiency as a handful of phenomena, i.e. milking goats, growing cabbages, solar, methane, wind & bikes. Yet for any given scenario there is an enormous fanout of alternatives which have to be discovered, catalogued, input/output matched, compared, math modelled, workshopped, optimised & finally installed & tested, together with training + maintenance. Such decision charting is the means of making the optimum selection of compatible hardware or methods for any given scenario such as islands, tropics, cool climate, deserts, bush, jungle, urban garden.

Consider cooking. Some options include: solar-methane-wood-grass-straw-electric (wind/hydro), geothermal hot rocks; plus related options as heat storage (haybox cooking), heat byproducts, preserving & gardens — all of which involve optimal decisions & ecologistical selection (see graph).

Creative habits. Self-sufficiency is easiest to apply & more exciting if we start by deconditioning ourselves from old habits of food + complex living + 240 V appliances. Make lists of things that have to be done & start in on the simplest item first to improve morale, all the time asking: *What else can I be self-sufficient in* ? Thus we need to become more invention conscious with convinced positive attitudes that anything can work, to brainstorm & learn from our vast history of 'could-have-been' successes. We need to evolve perhaps three approaches to every problem:

- to research data voraciously without being a hermit;
- to learn the components market backwards; &
- to bone up on value analysis (= massive cost reduction methods).

Let's elevate compatible tech & self-sufficiency to a prestigious, definitive & authoritative science. I'm often asked, especially by women, what subject are most useful in A.T. My reply is physics, metalwork, plumbing, gardening, math + electronics, never losing sight of the need to save all the items in this acronym: **2 x TREC,** namely:

TIME-RESOURCES-ENERGY-COST
TRANSPORT-RELATIONSHIPS-
ENVIRONMENT-COMMUNICATIONS.

Which seems to say it all. However, some social injustices remain, such as nuclear and fat taxes or excessive rates. Once a brief half hour prison term radically reduced the latter for me, as it could for many. So there will be battles along the way, if we really see our peace of mind & freedoms as vital.

In Genteel Frugality articles, 3 & 4 we shall detail our remarkably simple yet ingeneously effective solar system electronics, together with all the 12 V appliances + interfacing + suppliers + performance + prices. Such items proved vastly cheaper than their 240 V counterparts. Periphal items such as switches, fuse holders, control panel, cables, terminals & batteries cost zero or a few cents, using our neat tricks!

Pat Howden, Back Yard Tech Enterprises, Con Street, Macleay Island, Qld. 4165,

Ginger beer for gourmets

By Tricia Hawthorne,
Franklin, Tasmania.

I am not going to write about some new, marvellous, super-special recipe I've discovered, but simply to tell you people who haven't made it, those who have made it but didn't like it, and those of you who have had trouble, a few interesting and important facts about homemade ginger beer — or, as we often call it when it's at its best — champagne!

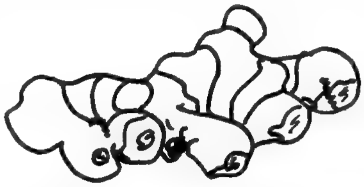
The recipe is the same as the one I used as a child and has been around for what seems like forever (**HARD TIMES HANDBOOK** readers will see it's the same recipe given by Pat Richardson of Toowong, Queensland — Irene & Keith). But, first some facts . . .

There is a definite relationship between the type and amount of sugar used, the temperature (time of year), the length of fermentation and the strength of the ginger taste. Let me give you some examples. If you follow the basic recipe given here and drink it at six days (cool climate), it will be just like lolly water, with little fizz, very sweet and just average ginger taste, though quite accpetable to the kids.

At the other extreme if, when feeding the plant, you cut down on the ginger to, say only half a teaspoon per day, then when making it use only 750 g or **raw** sugar and leave to ferment about 8-12 weeks (cool climate), you will have ginger champagne. This is very fizzy, very dry and has very little ginger taste (pour carefully so you won't disturb the sediment too much).

We can only speak from our experience here in cool Tasmania over the last two years, but for you people in the hotter parts of the world, a little care and experimentation should produce something good.

A word of caution. Ginger beer making can be very dangeous, due to excessive fermentation (generally caused by hot weather). So in hot weather, store in the coolest place possible and handle gently. We've never lost a bottle, overcoming this problem in two ways. Firstly, we store the bottles under the house. Living in a cool climate, the nights are generally cool, even in summer. Secondly, and just as important, we use champagne bottles with plastic reuseable corks which we tie down with wire.



GINGER BEER PLANT

1 teaspoon yeast (fresh or dry)
1 tsp sugar
1 tsp ground ginger
1 cup warm water

Method: Mix yeast and 1 tspn sugar in large jar. Add water (warm). Sprinkle on 1 tspn ground ginger. Cover jar with small cloth and feed for 7 days.

Feeding: 1 tspn sugar
1 tspn ground ginger
(more or less to taste)
Do not stir the plant.

MAKING GINGER BEER

7 litres water
1 kg sugar (less if desired)
½ cup strained lemon juice
juice from plant

Method: Put sugar and 1 litre water on to heat, stir until sugar dissolves. Put remaining water in large vessel, add dissolved sugar and water and lemon juice. Strain contents of your jar (the plant) through two thicknesses of a tea towel, squeezing out all the juice. Add liquid to other ingredients and stir well. Pour into bottles, stirring frequently. Cork well. Leave 6 days.

The sediment left in the tea towel is the start of a new plant. Can be halved to make two plants. Add 1 cup warm water and feed as before.

Champagne bottles are made for the job and can be obtained from restaurants, hotels and bottle-o's. You can get the stoppers from the same places, or buy them new. Both glass bottles and plastic stoppers are easy to clean and sterilise.

To summarise. The more ginger you use when feeding the plant, the stronger the taste. The amount of sugar determines the sweetness as well as the length of fermentation. We also found that raw sugar gives more fizz and a drier taste. Finally, the length of fermentation increases the fizz and the ginger beer becomes drier. Don't forget that the warmer the weather, the shorter the fermentation period . . . experiment!

Regarding the alcoholic content. We obviously don't have the facilities to measure this, but the simple fact that we are fermenting a liquid and converting sugar to alcohol means it must be at least a bit alcoholic when it is fairly old. But after working hard on a hot day we often come in and drink a bottle with absolutely no ill-effects, so the alcohol content must be pretty low.

One final tip. If you find you're making too much ginger beer and not drinking it, but don't want to discard the plant, feed only half the measure daily. Feed for two weeks and make the beer fortnightly. We've done this often with no difference in the result.

Armin says —

Dear Keith and Irene,

Thank you for Earth Garden No. 50. It makes great reading! You have exactly aired the viewpoint I have been pressing for so very long. Yes, the Earth matters!

Our property here was enormously degraded when we bought it 10 years ago. It only now shows traces of recovery. It is a long haul to soil fertility and nothing much is achieved if the environment is not restructured. Out here it is still more difficult as any tree makes very little growth until it is five years old.

At the present time the conventional farmers receive so much sympathy while they really deserve none. Very few farmers work their land in a sustainable fashion; it seems to worsen year by year. Around here they have bought more and more land and even bigger machinery. Whenever they work their land now they lose a great percentage of their soil as dust. A few more years like that and nothing of that original fertility will have survived.

They treat their animals as badly as they treat their land. They inflict nasty wounds on their young lambs when they should try to selectively breed flystrike resistance into their flocks. They also dehorn adult cows in the same cruel way, by just digging out their horns. All that is still sanctified by by governments and legislation. It is, however, a picture of cruel madness to behold and quite unnecessary too.

The advent of the alternative movement is really the greatest thing to happen on this Earth for a long time. How good to know you are pressing that message in Earth Garden. I hope we will be remembered by the regreening of the mountains and fields and by the animals and humans not butchered.

Kind regards, Armin Ptak, Roaring Lion Donkey Stud, Undalya, South Australia.

OLD ENGLISH STODGE

COLCANNON, TOAD IN THE HOLE, PICCALILLI & BOILED BEEF & CARROTS

In his letters including various **HARD TIMES HINTS** (see **Earth Garden 49**), John Guest gave his recipes for Colcannon and Toad in the Hole. These were actually on our 'short list' for the 'Tucker' section of HARD TIMES HANDBOOK, but were left out of the final manuscript, so we thought it would be a good idea to print them here. John also asked for a recipe for making Piccalilli in small amounts, which we are able to supply only after sifting through dozens of old recipes which invariably begin: "Take one peck cauliflowers . . ."

Colcannon probably originated in the Irish countryside, where it is also called Colly or Champ, but as Kalecannon, Kolcannon or Calecannon it has always been popular in the Scottish Highlands, where cabbage (kale or cale) is the main ingredient. Like bubble and squeak it is a good way to use up cold potatoes and leftover vegetables. Our oldest reference to this dish is in the eccentric Dr William Kitchiner's **The Cook's Oracle** (1827), but we prefer this Scots version and its modern adaptation, quite different to John Guest's recipe from the Rabbi!

CALECANNON

Calecannon and Vegetable Pudding, an Irish dish, is made by boiling and mashing greens, young cabbage or spinage, and mixing them with mashed potatoes, butter, pepper and salt; pressing it into a buttered shape to be turned out, or dishing it like mashed potatoes. In this dish at least two-thirds should be potato.

Plain Calecannon is made in cottages with infinitely less ceremony, and is quite as good. Boil the vegetables till nearly done; put the peeled raw potatoes to them to boil; drain from the water; add pepper, salt, a shred onion, and a good piece of butter or dripping; and mash all up together.

MISTRESS MARGARET DODS (Christina Jane Johnstone), **The Cook and Housewife's Manual,** Edinburgh, 1856 (first published 1826).

COLCANNON

2 cabbages
8-10 potatoes
pepper & salt
2-3 carrots
2 parsnips (or turnips)

Boil the vegetables, chop cabbages finely and mash the potatoes, carrots, and parsnips. Put all the vegetables in a saucepan, add a dob of butter and mix well together. Add pepper and salt and serve hot. *Variation:* Add the above mixture to a buttered baking dish. Cover with a sprinkling of breadcrumbs and bake in an oven at 180°C for 25-30 minutes, or until top is crusty brown.

Grated onions, spinach and skinned and mashed broad beans may be added to Colcannon.

TOAD IN THE HOLE

For peope who detest English 'stodge', the very name should put them off. John Guest's recipe using sausages is the accepted method of making this typically British dish nowadays, though formerly the chief ingredient was often rump steak with mushrooms or oysters in well off houses or cold cuts of meat in poorer homes. Sausages are usually cold leftovers from a previous meal.

500 gms cold sausages or meat
2 eggs
200g plain flour
1 cup milk
salt & pepper

Sift the flour and add a pinch of salt and pepper. Make a Yorkshire pudding batter by mixing in the eggs and milk. Beat well. Pour batter over the sausages or meat in a greased pie dish. Make sure the centre pieces of meat or sausages have their toady 'heads' above the batter. Bake for 1 hour in a moderate oven. This is the 'all purpose' batter recipe from page 185 of HTHB with the quantities doubled.

Piccalilli is a highly spiced relish or pickle of chopped vegetables which originated in the East Indies. Vegetables usually include cauliflower florets, cabbages, cucumbers, green tomatoes, squash, onions or green beans, zucchini or any combination of these. Here are two different recipes using small quantities (yielding about 2.5 kg).

SWEET PICCALILLI

1 small cauliflower
1 small cucumber
250 gm squash
250 gm shallots
50 gm raw sugar
35 gm flour
25 mg salt
1 teaspoon mustard powder
1 teaspoon ground ginger
1 teaspoon tumeric
600 ml vinegar

Peel, cut and remove seeds from squash and peel and slice shallots and cucumber. Break cauliflower into small florets. Dice all vegetables except the cauliflower and put them into a bowl. Sprinkle with salt and let them stand overnight. Next day, rinse and drain the vegetables well.

Make a smooth paste by mixing up the flour, ground ginger, mustard powder and tumeric with a little of the vinegar. Put the vinegar in a pot and bring to the boil. Add the paste and stir and boil for a further 5 minutes. Then add the vegetables and simmer gently for 10 minutes and allow to thicken. Cool and pour into hot sterilised jars.

SHARP PICCALILLI

6 medium green tomatoes
6 red capsicums
6 small onions
1 small cabbage
500 ml vinegar
50 gm raw sugar
2 tblspns mixed pickling spices (allspice, ginger, mustard & tumeric)

Seed capsicums and peel onions. Dice all vegetables, sprinkle with salt and let stand overnight. Next day, rinse and drain and place vegetables in a saucepan with the vinegar and sugar. Add the spices tied in a small muslin bag. Bring to the boil, then simmer gently for 20 minutes, stirring frequently. Remove the spice bag and bottle the pickle in hot sterilised glass jars and process in a boiling water bath for 5 minutes.

You could also use a prepared pickling vinegar in place of the vinegar and spice bag in this recipe. *Warning:* Don't use aluminium, copper, brass or iron utensils when pickling. See the guidelines on bottling and pickling starting on page 45 in HARD TIMES HANDBOOK.

In one of his letters, John Guest also asked:

"Can you get hold of and publish a recipe for 'Boiled beef and carrots'?

As the old Cockney Music Hall song has it:

Boiled beef and carrots,
Boiled beef and carrots,
That's the thing for yer Darby Kel,
Keeps yer fit & it makes yer well.

The unnamed ingredient is mustard. This could well be called London Curry. You use tough old carrots and the fattest bit of stringy beef you can get hold of, put it in a big pie dish (Mum always used a pudding basin), put a pastry cover on it and pop it in the oven. I't s real winter warmer!"

Our recipe again has the same name as John's, but is different (no pastry top, for example). Salt silverside or salt brisket are used for boiled beef today. Our Victorian ancestors preferred the 'aitchbone', a cheaper cut. The traditional accompaniments were boiled carrots, potatoes and onions with English mustard or horseradish sauce.

BOILED BEEF & CARROTS

1-2 kg salt beef
water to cover
4-6 carrots & potatoes
2-4 medium onions
10 peppercorns
bouquet garni (parsley, thyme, bay leaf)
3 cloves

Put the salt beef into a pot and barely cover with water. Add the spices and bouquet garni (in a small muslin bag) and bring slowly to the boil, skimming off the scum (this takes about an hour). Clean and slice the carrots, but leave the onions whole. Continue to boil the salt beef slowly for about two more hours, then put in the vegetables. Remove the muslin bag of spices.

Serve hot when the vegetables are cooked, with its own liquor as a sauce and mustard. It's nice cold, including the vegetables. If you have your own salt beef or beef which has been pickled for a long time, soak overnight in cold water before cooking. Fresh (unsalted) beef may also be used.

ACCESS DIRECTORY

BOOKS BY MAIL (page 29)

As we said in the introduction to the **1986 Australian Access Directory** in Earth Garden 50:" By the time the ink is dry on this page, many of the listed sources will have changed in some way ... " No sooner said than done! Please note the following changes:

Aquarian Book Distributors Pty. Ltd. have moved to new premises. Their postal address is now : 27 Power Avenue, Alexandria, 2015. Write for a free catalogue of books available by mail.

Delete: **Australia and New Zealand Book Co. Pty. Ltd**. The company has been out of business since December 1985. (*Thanks to John Last & Jack Horner*)

Organic groups (page 16)

Henry Doubleday Research Association (HDRA). The address should be: C/- Secretary, Dick McNeill, 195 Comleroy Road, Kurrajong 2758. Annual subscription $10.00. Member of IFOAM. Quarterly journal, *Natural Growing*, edited by Jacqueline French.

Omitted from the list, by error: The Organic Growers' Association of NSW, Hon. Secretary, Mrs. J. Lubke, P.O. Box 2, Bringelly 2171. Membership $9.00 annually, $2.00 library joining fee. Quarterly newsletter. (*Thanks to Joseph Barzel, St. Marys, NSW*)

Permaculture (page 17)

Permaculture Nambour Inc.'s address should be: P.O. Box 650, Nambour 4560.

Wholefoods

Further Access listings for **Wholefood and organic supplies** and **vegetarian restaurants** has been cancelled for lack of feedback and interest.

ORGANIC EVENTS

Henry's Open Day

The regular Open Day of the Henry Doubleday Research Association of Australia (HDRA) will be held at Sahara Farm, 1 Robson Road, Kenthurst (Sydney) on Sunday, October 26. It's always a lively day for people interested in organic growing, with garden inspections, talks, food and stalls.

Inquiries to the Secretary, HDRA, Dick McNeill, 195 Comleroy Road, Kurrajong, NSW 2758.

Organic Farming and Gardening Society (Aust.)

The OFGS (Aust.) meets regularly in Room 11 at the Victorian College of Agriculture and Horticulture (VCAH) Burnley Campus, in Swan Street, Richmond (Melbourne). Mr. R. Goodman will speak on *Bees, Man & his Crops* on Tuesday, September 30, at 7.30 p.m. Minimum donation, members $1, non members $2 (includes wholesome supper).

Further information from OFGS (Aust.), P.O. Box 2605W, Melbourne, Victoria 3001.

MULTIPLE OCCUPANCY

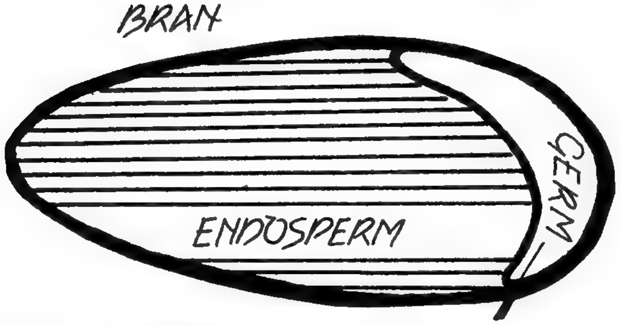
The Rural Resettlement Task Force (RRTF) is a non profit association, established in Nimbin in 1983 to provide assistance and information for individual communities and Multiple Occupancy (MO) settlements or 'hamlets' (see Earth Garden 48) in rural areas.

The RRTF **Bibliographical List** of resource material on file covering a wide variety of topics including building laws, environment and planning laws, Telecom policies on MO, rating and land taxes, etc. Copies of most of this information may be obtained for a fee.

° Send 3 x 33 ¢ stamps for the list to:

Rural Resettlement Task Force (RRTF), P.O. Box 62, Nimbin 2480.

Let's look at bread



By Ludwig Siergert

The traditionally trained nutritionist is likely to tell you that white bread is just fine! You can list off all the vitamin and mineral contents and see how an average serving of bread can easily provide the RDA (recommended daily allowance) for this person or the other.

But the real picture is not so simple. Take a look at a grain of wheat.

The majority of vitamins and minerals are held in the outer layer (the bran) and the germ (wheat germ). The *endosperm* is the inner part that becomes white flour and is mostly carbohydrate.

This carbohydrate is used as an energy source in our bodies. Various vitamins and minerals (phosphorus, magnesium, vitamin B6, etc.), are involved in using that carbohydrate as energy and that is where the problems occur.

In a whole grain of wheat there are adequate vitamins and minerals for all the carbohydrate to be used effectively. In white flour there is plenty of carbohydrate and few other nutrients. So your body must *borrow* from body stores to use up that carbohydrate. That's fine...occassionally...but when you look at years and years of such borrowing, the vitamin-mineral bank balance goes into the red!

One example of this problem occurs with the liver. B vitamins are normally stored there. Borrowing over a period of years leaves the liver depleted, so when it is trying to get on with its dozens of jobs – cleaning your blood, energy production, making new substances out of the food you eat – it does not have the raw materials it needs. When the liver cannot do its job, hundreds of other body processes suffer as a result. Yes, hundreds!

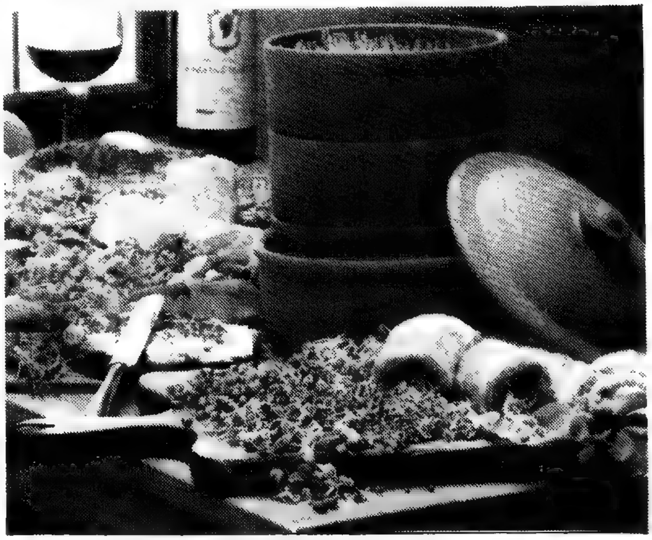
Whenever we put any refined carbohydrates (sugar, honey, alcohol, etc.) into our body, the same borrowing process occurs. You might seem fine for years, but eventually the signs become evident. Feeling tired these days? Having weight problems? The sugar content of prepared food products is frightening for this reason. Look at *Special K* – 13% total sugars, more than half of that probably sucrose (cane sugar): CHOICE, February, 1984.

Besides all that, by not including the bran, all that lovely fibre is being wasted (or sold to you separately). As well as the fact that it inherits fewer vitamins, white flour is up against another factor. Modern milling methods involve steel rollers which, in crushing the grain, get to quite incredible temperatures. Most vitamins are pretty sensitive to heat, also to oxygen and to light, so there are probably not many vitamins left at the end of the journey from farm to table.

Ideally you should grind the whole grain just as you are about to use it. For most people though the best we can do is to buy fresh, stoneground (a cooler process) wholemeal flour, if possible biodynamically grown. All the goodies are in the freshly ground flour. To look at long term use, the body will thank you for it by keeping you in good shape. Nothing can beat homemade porridge or muesli (grinding it coarsely) with all the nutritious value. It's enough now to say that whole grains digest slowly to trickle a steady stream of sugar (glucose) into your bloodstream.

Refined carbohydrates break down to sugar and race into your bloodstream so quickly that they start your body off into the erratic swing of blood sugar levels that characterises *hypoglycaemia*.

Start thinking about all this and change to whole grain foods. Do it slowly if you cannot get used to the natural taste, but start *now* !



STONE GRINDERS & SPROUTERS

Baking your own bread and bread rolls from freshly stoneground flour is the ideal. Ludwig Siegert imports Hawo's electrical stone grinding mills in solid timber cases (see EG50) and also Hawo's porous terracotta sprouters with bottom bowls, three perforated seed bowls and a cover, shown in the photo.

☐ Send SAE for further details to: Ludwig Siegert, **M & S Import-Export**, PO Box 69, Maroochydore, Qld 4558.

HOME SCHOOLING

The girls with our lambs and goat kids. Left to right: Jessica (12), Eleisha (7), Innica (6), Anthea (14) and Jemima (15).

By Cheryl Dryden (Dip. N.S.T.C.)

The subject of home education is one which is very dear to me.

It first became so when I discovered that my children were coming home from school with attitudes which did not please me. I have five daughters and I am a single parent who has always tried to teach my children to be gentle and loving.

At school, to my displeasure, they were learning to be agressive just to survive. They were learning to be acquisitive to the degree that beauty had no meaning unless it was made of money or bicycles or the like. Good nutritious food was not trendy and therefore not to be eaten.

We found that we were striving to be just like everyone else, something which was not to be found in my book of aims.

The next problem that arose was with the teaching methods of the local teacher and school. Really it was the attitude of the Education Department, reflected through the local school, which bothered me. The basic problem hinged on the premise that the Education Department felt that they had the legal right to take my children and teach them anything that they wanted, whether or not I approved. I was labelled as 'Only the parent', while my children became 'our children'. I was told: "We legally have the right ... you legally must send your children to school."

I began to wonder what the rights of parents were, or if they had any.

I could not see that any law could could compel any parent in Australia to surrender up their children to the State, to be indoctrinated in State ways. These were my children and I wanted them raised in my ways.

After various disagreements on teaching methods for reading, writing and arithmetic and the content of some lessons, I removed my children from school and notified the Education Department of the move in writing. I also notified them that my children would not be returning to school under any circumstances. At this point their attitude towards me changed and they became very obliging. They suggested that the School Inspector should call on me at my home to discuss my problems with the school. I refused their offer, but did agree to discuss the business of the children out of school.

It was then that I discovered the **Exemption Certificate** and a small clause in the Public Instruction Act (Amended) 1916, Part 11, Section 4, No. 4 b) "that a child was receiving regular and efficient instruction ... the onus of proof of which shall be upon the parent or guardian." Nowhere did it say that my children must physically attend a Government school. The rest of the rule book was written on the basis that I was incapable of giving my children "regular and efficient" education. This was not so. I was a trained teacher before I was married.

My next step was to investigate the Exemption Certificate. I was given to understand at first that it was issued by the Education Department. However, I discovered that this was incorrect and that it was issued by the Welfare Department, and specifically by the Minister on the recommendation of the local Welfare Officer. The local Welfare Officer consulted with the local Schools Inspector.

Having declared my intentions, I was visited by both these men. The Schools Inspector came to see if I was capable of teaching and if, in his opinion, I was capable of sustaining the continuous process of learning in my children over the entire year. He was perturbed to find that I was on a pension. I was forced to point out to him that the acceptance of a pension did not mean the automatic loss of my intelligence and ability to think and teach. My reasons for withdrawing my children from school were discussed with him. I will not go into them here, because if you are contemplating this move, you will know what your own reasons are. My real reasons had no sway with bureaucracy, so I invented a few which seemed to satisfy them.

The Welfare Officer was interested in whether my children were well cared for physically, mentally, emotionally and socially. Both men stressed to my children that they could go to school if they wanted to. In private, after the interviews, the recollection of this question brought gales of laughter from all five children, but at the time they solemnly declared that they were aware of this.

The applications for the Exemption Certificates were duly filled in and sent away, my having gained approval from both men.

The next step was to organise my teaching and my children's learning. What is required by the Education Department is that you should have proof at the end of the year, when you and your children are inspected, that your children have received *regular* schooling. So I devised a system of numbering each day's work in each subject, no matter when it was done, with the week number and the day number, e.g. WK 1/5 WK 9/3, etc. That way I had indisputable evidence of regular and adequate work.

Next for my own benefit, I drew up a programme book. This was just an exercise book in which I listed every subject that my child would do. Then week by week I listed what the weekly content of each subject would be.

For example:

Biology — 1986 — Term 1 — Week 1 — Snakes

Snakes are cold-blooded. What is cold-blooded? What is hibernate? How is it done? The life of the snake. Habits, etc.

This way I could see, at a glance, how much work was being done in a term and I could judge if enough progress was being made to be said to be an 'efficient education.'

At this point, you might feel that I was toadying to the establishment. As I saw it, I was out of their system, free to make my own content and to teach it in my own way. To keep on with this practice I had to give a little — just bend with the breeze.

I had a list of recommended text books to choose from and by watching the newsagents and book stores and even the Salvation Army secondhand book racks, I found a lot of useful books and teaching materials. I obtained from the Education Department a 60's time list — a guide to how many minutes per week should be spent on each subject. I used this as a rough guide to spend, say 1/3 of time on English, 1/3 on arithmetic and 1/3 on everything else, etc.

In writing this article, I know that I am 'preaching to the converted', but I found it useful to be able to read other people's ideas on the subject of home education as it helped to clarify my own.

Firstly, as a teacher and a parent, I am aware that a child learns at a faster rate between birth and six years of age than at any other time in his life. In that six year period the child will learn more than in any other six year period in his life. He learns to defy gravity and stand erect, he learns a whole language, the rudiments of music, the concept of numbering and counting. He learns about love, and caring and moral values. It seems strange to me that a parent is capable of teaching all these things to a child for six years, but on his sixth birthday, by law, becomes incapable of teaching any more.

Secondly, the learning process takes place during every moment of your child's life. Learning can be done anywhere, not only at a desk. I believe and have proved it, that a child learns faster in a situation where the learning is pertinent and the child's imagination is captured. For example, when a child spots a rabbit running through the bush and asks "Why does the rabbit have a white tail?" The child wants to know and to know now, not in nine month's time in the classroom, when he would rather be out playing football. Home teaching allows a parent to answer *on the spot*, so it is far more effective.

Consider these points:

1. When a parent teaches at home, family values can be shared and lived.
2. Parents can provide patience on a one-to-one teaching basis, which is not available in schools.
3. Home teaching parents are concerned, thinking and caring people, or they would not be prepared to take on the responsibility of home teaching.
4. As discipline is not a problem in the home, three times as much work can be done in a set time as at school, leaving plenty of leisure time for youngsters.
5. Home taught children are usually self motivated, free thinking, inventive, self directed and independent.
6. There is no need for the child to readjust loyalties from the parent and family to the teacher and the institution.
7. There is no peer pressure for the child to learn to hate his parents in the teenage years — just because the others do and they must 'run with the crowd'.
8. The attitudes of society which are held to be *truth* at school, may in fact be lies and *not be worthy* of belief.

You don't have to be a qualified teacher to teach your children at home, but you must have the ability to sustain your childrens' enthusiasms and learning over the long stretch of the years. By choosing the correctly structured text books and following the weekly patterns in them, you have the work already prepared and set out.

The last part of home education that must be dealt with is the High School end. The setup in NSW at the moment is that a child must do Years 9 and 10 in a Departmental School if he wishes to obtain a School Certificate. To this end, I sold my house in town and moved to an 'isolated' area, where my children would qualify for Correspondence from the Education Department. I was informed that my qualifications did not allow me to 'give an efficient education' to high school children. To qualify for Correspondence High School in NSW, you must live10 miles (16 km) from the nearest high school and 2.8 miles (4.5 km) from the nearest stop of a school bus route.

My two elder girls came to high school age and joined the

For social contact, we go to horse shows. Shown here are Sambo and Smokey with ribbons from Mudgee and Rylstone Shows, 1986. Left to right: Jemima, Jessica, Anthea, Innica and Eleisha.

Correspondence School. My eldest girl left after three months to work at home, as she could not and would not accept the 'garbage' that arrived by mail as an excuse for lessons. My second daughter has had her lessons suspended twice because I expressed my opinion (when it was asked for) and the powers that be did not like it. However, she has doggedly ploughed on through 15 months, but now she too has had enough and has decided to leave at 15 or 16. I personally do not believe that Correspondence from the Education Department is a viable alternative. However, there *is one* which is viable, in my opinion.

If my second daughter left school now she would not obtain a School Certificate. If she takes the course I recommend to her, she will not receive a School Certificate either. Are we educated to learn, or to receive School Certificates? My daughter wishes to learn. The course of which I speak is from the Accelerated Christian Education Group in Queensland. I have studied their curriculum and it pleased me, especially the high school section. While it is not approved by the NSW Education Department towards a School Certificate, it does constitute an 'adequate and effective education' for high school home learners.

Lastly, if you are 'isolated' by the above definition, or almost isolated and in an area with bad roads, you may qualify for A.I.C. — Assistance for Isolated Children. This is a government body which pays $500/year/child to assist with teaching isolated children, whether they are in a government school or not.

At this stage I have had my children out of Departmental schools for 4 1/2 years. My children are now aged 15, 14, 12, 7 and 6. I hold an Exemption Certificate for all five. I have produced a newsletter type publication which contains as much assistance as possible to anyone who wishes to take their children out of school. I will gladly forward it to anyone who requires it for the cost of $3.50 (postal note or cheque only). It includes the names and addresses of groups and organisations mentioned in this article as well as relevant passages quoted from the Public Instruction Act.

I have also prepared a publication called **Developing Programmes for Home Schooling**. This publication includes the types of programmes that you can use, instructions on how to turn a topic into a programme, text books containing weekly systems and a self-teach assistance programme. It also contains a list of lesson titles which I have used successfully. Please write for cost. I also have actual lessons and activities for kindergarten, 1st class and 2nd class and programmes for all subjects for 3rd, 4th 5th and 6th class primary classes.

If I can be of any further assistance, or if I can answer any questions, do write and I will do my best, but please enclose a stamped, self addressed envelope.

"If you are proud of the carrots you grow, how much more should you be proud of the children you have grown."

Mrs. Cheryl Dryden, Home Schooling Group, NSW, 'Montes Dio', RMB Bara Road, Lue, via Mudgee, NSW 2850.

ENERGY WORKS! CORRECTION

Someone has just pointed out the most glaring and potentially dangerous mistake in the short article on page 165 of **Energy Works!** called **Voltage adapter.** The offending sentence reads:

"If you make an adapter by wiring a cigarette lighter socket to a three-pin plug, you can plug the adapter into any three-pin power point."

Although the article is a reprint from the original Earth Garden article, it has been separated from the accompanying material and the relevant warnings, which makes it a potentially dangerous (deadly) statement. It should read:

"If you make up an adapter by wiring a cigarette lighter socket to the standard low voltage plug that you use around your house, you can plug the adapter into any power point. Otherwise you could consider using cigarette lighter sockets as power points." — Peter van der Wyk.

NEWS FROM US

Earth Garden in 1987?

Dear friends,

We regret to say that Earth Garden 52, out in November, will be the last issue that we will bring you. By that time we will have spent 15 years producing Earth Garden — a large slice of our lives. They've been good years for us and we're proud of the results of our efforts. We've made some warm friendships and, we hope, helped many of our readers.

We know that many of you will, like us, be upset by this news. It has been a difficult decision to make, but we feel the time has come for us to move on to other projects. We're now both in our mid forties and believe we can't put off this change in direction any longer. So, EG52 might be your last chance to tell others of your experiences with the 'good life' in Australia. Deadline for articles, display ads, land lines and unclassifieds is October 10.

For some time we've been searching for the right group or person to continue publishing Earth Garden along the same lines, but so far we have not found a suitable arrangement to keep our magazine going in the way we (and you) expect. We'll keep looking and let you know of any plans for the future next issue. Meanwhile, **we are not accepting subscriptions for 1987.** We still have all the back copies of Earth Garden (except for EG13) and our books (see inside front cover). Get in with your orders while stocks last.

Peace & love,
Keith & Irene.

The Settler's Guide
Old time skills and bush lore

Compiled by Keith Smith

Nelson, 1983 (second printing), large format paperback, 176 pages, illustrated. ☐ $15.95 posted.

Pioneer a bush block from 'go' to 'whoa'. How to clear, fence, square a gatepost, whitewash, build a slab hut, a rammed earth house or a timber windpump with hand tools. Harness horses and select, sharpen and care for bush and bench tools like axes, adzes, planes, crosscut saws, mauls and scythes. Tried and true advice from *The Agricultural Gazette* of NSW, 1890-1910.

BOOKS & ISSUES

EARTH GARDEN, PO Box 378, Epping, NSW, Australia, 2121

Sorry, no subscriptions will be accepted for 1987.

BOOKS
ENERGY WORKS! — $19.95 .... $..........
Third Earth Garden Book — $5.50 .... $..........
The Settler's Guide — $15.95 .... $..........
Illustrated EG Herbal — $5.50 .... $..........
HARD TIMES HANDBOOK — $8.50 .... $..........
MAGAZINES
Future: EG52 — $2.75 .... $..........
1986: EG49-EG52 — $11.00 .... $..........
The lot: EG1-EG52 (excludes EG13) — $90.00 (save $25.00) .... $..........
Single issues: EG45-EG52 — $2.75 each .... $..........
EG33-EG44 — $2.50 each .... $..........
EG26-EG32 — $2.25 each .... $..........
EG22-3 & EG25 (Access) — $2.50 each .... $..........
EG1-EG12/EG14-EG21/EG24 — $2.00 each .... $..........
Total enclosed $..........
Name ....
Address ....
.... **Postcode** ....

No need to cut this page, just send us the details in a letter if you prefer.

Back copies

EG1: Move out . . . food co-ops . . . Kibbutz and Moshav . . . Montsalvat . . . herbs . . . Fred Robinson . . . bean sprouts . . . compost and mulch . . . comfrey . . . earthworms.

EG2: Start a garden . . . Neil Douglas . . . Keyline system . . . Kiewa farms . . . drying and storing food . . . hydroponics . . . recycling garbage . . . nutrition.

EG3: Herbs . . . compost . . . fast fertiliser . . . all about goats . . . mudbricks . . . domes . . . water wheel . . . bread . . . salads . . . pottery . . . spinning . . . vegies.

EG4: The honey bee . . . back to the land in Tassie . . . the transition . . . black sheep . . . tanning . . . candles . . . bread . . . donkeys . . . a wall-hanging.

EG5: The wind — windmills . . . windpumps . . . generators . . . raku pottery . . . Cinva ram . . . poultry . . . Hamburghs . . . moon planting . . . fallout shelter . . . vegan way.

EG6: Solar 1 — sun cults . . . solar cooker . . . sundials . . . Lost World . . . Clifton Pugh . . . concrete house . . . Shalom . . . Cajun cookin' . . . horses . . . spirit of Nimbin.

EG7: Solar 2 — hot water . . . Mudbrick techniques . . . Angora goats . . . make a leather bag and belt . . . mushrooms . . . natural dyes.

EG8: Gas power — methane digester . . . by truck to Tassie . . . cumbungi hats . . . inkle loom . . . candles and tapers . . . country cottages . . . A-frame . . . school gardens . . . sourdough.

EG9: LP gas . . . Mary's place . . . building with stone rubble (slipform) . . . macrobiotics . . . oats . . . ducks . . . rug frame . . . how to kill a pig.

EG10: Granite house . . . geese . . . chip heater . . . bamboo flutes . . . build beehives . . . Jarrah shingles . . . mudbricks . . . Bio-dynamics . . . seaweed . . . tandem . . . Index (EG1-10).

EG11: Water — hydraulic ram . . . waterwheels . . . okra . . . seed primer . . . heavy horses . . . tomatoes . . . soft technology . . . wine . . . hard cheese . . . start with hens.

EG12: Keeping food — drying . . . salting . . . bottling . . . storing . . . tahu . . . tropic delights . . . plant propagation . . . plans for a solar water heater . . . solar stills and cooker . . . Moora Moora.

EG13: OUT OF PRINT.

EG14: Self-sufficiency — gardens for all . . . Botobolar vineyard . . . Terania Creek . . . millet . . . Robinson Crusoe . . . Walden . . . The Nearings . . . stone building.

EG15: A Lytel Herbal — growing and using herbs . . . text and illustrations from the classic 16th C herbals . . . modern commentary . . . Index to EG15.

EG16: A Lytel Herbal (Part 2) — comfrey, lavender, wormwood, yarrow . . . poultry shed . . . peafowl . . . goats . . . basic beekeeping . . . rammed earth building . . . hydraulic ram.

EG17: Fencing . . . dry stone walls . . . make soap . . . nets . . . pole shelter . . . breeding black sheep . . . The Autonomous House . . . asparagus . . . Aeolian harp . . . ducks . . . Khaki Campbells.

EG18: Fruit garden . . . oranges . . . lemons . . . olives . . . nuts . . . tropical fruit . . . fodder trees . . . road building . . . wood fired kiln plans . . . Cinva-ram cottage . . . sunflowers . . . homebirth.

EG19: Wood heat — pot bellies . . . Jotul . . . cooking . . . making a quid . . . build a storage cellar . . . bushfires . . . stonefruit . . . macadamia nuts . . . binding your EGs . . . tree planting . . . budding.

EG20: Apples . . . pears . . . cordon and espalier . . . build a haybale pig house . . . pollen . . . rose hips . . . mudbrick flats . . . solar homes . . . gourds . . . preserve fence posts.

EG21: Womancraft — all articles by women . . . earthly arts . . . axewomanship . . . glove puppets . . . spinning . . . weaving . . . easy rugs . . . Sumatran house . . . old roses . . . Index (EG10-20).

EG22-23: Australian Access Sourcebook . . . 150 pages . . . Aborigines . . . organic growing . . . permaculture . . . earth building . . . wind . . . solar . . . water power . . . technology . . . water supply . . . access to groups, plans, books, tools.

EG24: Place — 24 new settlers write . . . Mare Carter . . . Ron Edwards . . . Neil Douglas . . . Gundaroo Store . . . Rainbow Region . . . Mt Oak . . . Moora Moora . . . Universal Brotherhood . . . bush ashram.

EG25: Australian Access Sourcebook (Part 2) — 130 pages . . . livestock . . . aquaculture . . . fencing . . . killing . . . tanning . . . food and nutrition . . . grain grinders . . . solar homes . . . methane . . . greenhouse . . . Dorothy Hall.

EG26: The earth-built kasbahs . . . owner built homes in stone . . . timber . . . mudbricks . . . a slab cottage . . . tree felling . . . solar electrics . . . acorns . . . compost dunny . . . quandong . . . pumpkin recipes.

EG27: 100 tropical food plants for Australia (part 1) . . . 16 legumes . . . winged bean . . . pigeon pea . . . lablab . . . cowpea . . . adzuki bean . . . blacksmithing . . . bluestone building . . . wok cooking.

EG28: Tropical food plants (part 2) . . . horse and buggy . . . packhorsing the Alps . . . black sheep . . . Merinos . . . bullocks . . . tamarillo . . . stringybark baskets . . . solar trike . . . persimmons.

BACK ISSUE LIBRARY

All the back copies, from 1972 to 1986 (EG1 to EG52, except EG13). ☐ $90.00 posted. A survival kit of self-reliance, the 'big packet' (5 kg) has 3,100 pages of practical information on growing, building, energy, household economy, livestock, craft and tucker and tales from New Settlers all around Australia.

EG29: Mudbricks — the monastery at Stroud . . . Bob's bonza brickmaker . . . earth floors . . . curved walls . . . herb roof . . . cutting axe . . . low energy design . . . coconut mats . . . mangoes . . . tropical food plants (part 3).

EG30: Organic growing — compost heaps, pits, trenches, boxes, bins and barrels . . . no-dig . . . mulch carpets . . . semi-arid growing . . . preserving figs . . . tempeh . . . pasta . . . glass bottle windows.

EG31: Energy — make a hydraulic ram . . . second-hand windpump . . . mudbrick sequels . . . freezing food . . . zucchini glut . . . drying fruit . . . all about sprouts . . . hot box cooker . . . building a log house (part 1).

EG32: Year of the Tree — St Barbe Baker . . . tree tales . . . how a tree works . . . farm tree . . . native from seed . . . coppicing . . . Neil Douglas interview . . . cob building . . . log house (part 2).

EG33: Tenth anniversary issue . . . timber felling . . . lifting poles . . . post and beam design . . . log house (part 3) . . . parquet floors . . . backyard rabbits . . . goats . . . fowls . . . dry pit loo . . . portable henhouse.

EG34: China — communes . . . trees . . . fish farming . . . recycling human wastes . . . biogas . . . transport . . . travel notes . . . Chinese earth building (Ron Edwards) . . . rainforest . . . bread and jam.

EG35: Bees and trees — tribute to St Barbe Baker . . . backyard bees . . . mudbrick workshop . . . footings for earth walls . . . make a solar collector . . . magpies . . . earthworms . . . fodder trees.

EG36: Retrn to Nimbin . . . new settlers . . . a woman builder . . . pawpaw plantation . . . solar electric systems . . . potty garden . . . choughs . . . Peru . . . lavender sachet . . . biological building . . . farm structures.

EG37: HARD TIMES . . . making paper . . . newspaper fuel . . . rags to rugs . . . barter . . . slush lamps . . . sawdust stoves . . . Depression dodges . . . hand grain mills . . . 120 household hints.

EG38: Hard Times tucker . . . bread . . . soups . . . yoghurt . . . no-meat meals . . . beer . . . electric grain grinders . . . Gujarati village . . . mudbrick hermitage . . . earth walls and bushfires . . . Noel's island.

EG39: Build Peter Pedal's bike wheel wind generator . . . fire without matches . . . bushfire defensive house . . . avocado growing guide . . . rosehips . . . car battery power . . . farm energy . . . backyard food.

EG40: Communities . . . running a food co-op . . . three in a caravan . . . Scott Nearing's a good life . . . cyder in Tasmania . . . our self-built house . . . earth floors . . . the billy . . . olive oil . . . hares . . . cashew nuts.

EG41: Sahara . . . Timbuktu . . . Uganda . . . pack donkeys . . . horse float journey . . . mat-tents . . . build a S-rotor wind generator . . . damper . . . yeastless bread . . . food co-op accounts . . . real potatoes. . . Index, EG31-40.

EG42: Earth covered homes . . . Burra dugouts . . . slipform stone . . . the flood-defensive house . . . tomato tips . . . deep ecology . . . build a pigsty . . . EG reader survey . . . the Tuareg . . . Jean Pain's methods.

EG43: Earth domes and vaults . . . rendering earth walls . . . quarry bush stone . . . bush shower . . . Peter Pedals' incinerator hot water and Pelton wheel . . . low voltage wiring . . . sheep . . . donkeys . . . horses.

EG44: Plug in the sun — solar electric systems . . . 12V to 240V . . . batteries . . . inverters . . . alternative washdays . . . how to make a pedal drier and 12V computers . . . solar panel booster . . . Solar Trek.

EG45: Waterworks — shifting water with sun, wind and water . . . solar electric pumps . . . gravity feed . . . hydraulic ram . . . Platapump . . . the cyclone-defensive house . . . bunya nuts . . . 12 V problems.

EG46: Windworks — wind generators . . . solar trackers . . . water turbines . . . 12 V bilge pump . . . herbal shampoo . . . compost loos . . . Tanzania . . . the algae pond . . . 12 V lights . . . Krypton lamps.

EG47: Practical projects . . . hanging a door . . . household plumbing . . . waterwheel pump . . . cycling Mongolia . . . the sun-pump . . . livestock . . . Aussie yurt . . . pigeon pea . . . bee tools . . . Peter's pedal machine.

EG48: Bob Rich's rammed earth primer . . . 1930s Dab, Pug and Pise, compost muncher . . . sushi and sashimi . . . Energy Pulse . . . buying an energy system . . . animal shelters . . . hand dug wells . . . ferrocement tank . . . growing firewood.

EG49: Chlorella culture . . . Solar Pack . . . Peter Pedals' TARDIS . . . just 6 volts . . . Poll Herefords . . . Babaco . . . Genteel frugality . . . Evening Primrose . . . home-made ladders . . . ferrocement roofs . . . building blues . . . immersion heaters . . . HARD TIMES hints . . . Soper with Chaucer.

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EG50: Land ethics . . . Sustainable agriculture . . . Biodynamic, Keyline, Organic, Permaculture methods . . . healthy sweets . . . bamboo ladder . . . happy gardening . . . homegrown spuds . . . stone & mudbrick arches . . . Earthbricks . . . ferrocement tank . . . poultry pyramids . . . Energy Pulse.